PROOF OF THE CONTINUED FRACTION CONJECTURE FOR $(a, b) = (z^3, z^4 + z^2 + z + 1)$

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Abstract. The continued fraction conjecture claims that the continued fraction defined by the (a, b)-Thue-Morse sequence is algebraic over $\mathbb{F}_2(x)$ for all pairs of distinct elements (a, b) in $\mathbb{F}_2[x] \setminus \mathbb{F}_2$. In this paper we prove the conjecture for $(a, b) = (z^3, z^4 + z^2 + z + 1)$.

1. Introduction

Let $\mathbb{F}_2$ be the finite field of cardinality 2. Given a sequence of polynomials $\mathbf{a} = (a_0(z), a_1(z), a_2(z), \ldots)$ of elements from $\mathbb{F}_2[z] \setminus \mathbb{F}_2$, we define the infinite continued fraction

$$\mathrm{CF}(\mathbf{a}(z)) = \cfrac{1}{a_0(z) + \cfrac{1}{a_1(z) + \cfrac{1}{a_2(z) + \cfrac{1}{\ddots}}}} \tag{1.1}$$

as the limit of the finite continued fractions

$$\mathrm{CF}_n(\mathbf{a}(z)) = \cfrac{1}{a_0(z) + \cfrac{1}{a_1(z) + \cfrac{1}{\ddots + \cfrac{1}{a_n(z)}}}} \in \mathbb{F}_2((1/z)). \tag{1.2}$$

Conversely, each power series in $\mathbb{F}_2[[1/z]]$ without constant term

$$c_{-1}z^{-1} + c_{-2}z^{-2} + c_{-3}z^{-3} + \cdots \tag{1.3}$$

admits a continued fraction expansion of form (1.1).

Let a and b be two distinct elements from $\mathbb{F}_2[z] \setminus \mathbb{F}_2$. We consider the continued fraction (1.1) associated with the (a, b)-Thue-Morse sequence

$$\mathbf{t} = (t_0(z), t_1(z), t_2(z), \ldots) = (a, b, b, a, b, a, a, b, \ldots)$$

that we shall denote

$$\mathrm{CF}(a, b) := \mathrm{CF}(\mathbf{t}). \tag{1.4}$$

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Theorem 1.1. *When* $(a, b) = (z^3, z^4 + z^2 + z + 1)$*, the two power series* $\mathrm{CF}(a, b)$ *and* $\mathrm{CF}(b, a)$ *are algebraic over* $\mathbb{F}_2(z)$*, with minimal polynomials of the form*

$$p_4(z)y^4 + p_3(z)y^3 + p_2(z)y^2 + p_1(z)y + p_0(z) = 0$$

where, for $\mathrm{CF}(a, b)$*,*

$$\begin{aligned}
p_0(z) &= z^{21} + z^{19} + z^{18} + z^{16} + z^{15} + z^{13} + z^{11} + z^{10} + z^8 + z^7 + z^3 + 1,\\
p_1(z) &= z^{25} + z^{24} + z^{22} + z^{21} + z^{19} + z^{18} + z^{17} + z^{16} + z^{14} + z^{11} + z^{10} + z^9\\
&\quad + z^6 + z^3,\\
p_2(z) &= z^{28} + z^{22} + z^{10} + z^6,\\
p_3(z) &= z^{25} + z^{24} + z^{22} + z^{21} + z^{19} + z^{18} + z^{17} + z^{16} + z^{14} + z^{11} + z^{10} + z^9\\
&\quad + z^6 + z^3,\\
p_4(z) &= z^{22} + z^{21} + z^{20} + z^{19} + z^{18} + z^{16} + z^{15} + z^{13} + z^{11} + z^7 + z^6 + z^4 + z^3,
\end{aligned}$$

and for $\mathrm{CF}(b, a)$*,*

$$\begin{aligned}
p_0(z) &= z^{21} + z^{19} + z^{18} + z^{15} + z^{13} + z^{12} + z^{11} + z^{10} + z^7 + z^4 + z^3,\\
p_1(z) &= z^{25} + z^{24} + z^{22} + z^{21} + z^{19} + z^{18} + z^{17} + z^{16} + z^{14} + z^{11} + z^{10} + z^9\\
&\quad + z^6 + z^3,\\
p_2(z) &= z^{28} + z^{22} + z^{10} + z^6,\\
p_3(z) &= z^{25} + z^{24} + z^{22} + z^{21} + z^{19} + z^{18} + z^{17} + z^{16} + z^{14} + z^{11} + z^{10} + z^9\\
&\quad + z^6 + z^3,\\
p_4(z) &= z^{22} + z^{21} + z^{20} + z^{19} + z^{18} + z^{15} + z^{13} + z^{12} + z^{11} + z^8 + z^7 + z^6 + z^3\\
&\quad + 1.
\end{aligned}$$

2. Proof

Define the sequences of polynomials $(P_n(z))_{n\geq 0}$ and $(Q_n(z))_{n\geq 0}$ by

$$\begin{pmatrix} P_n(z) & Q_n(z) \\ P_{n-1}(z) & Q_{n-1}(z) \end{pmatrix} := \begin{pmatrix} t_n(z) & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} t_{n-1}(z) & 1 \\ 1 & 0 \end{pmatrix} \cdots \begin{pmatrix} t_0(z) & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}.$$

By the basic properties of continued fractions, we have

$$\mathrm{CF}_n(a, b) = \frac{P_n(z)}{Q_n(z)} \in \mathbb{F}_2((1/z)). \tag{2.1}$$

As formula (2.1) is not efficient for calculating $\mathrm{CF}_n(a, b)$, a fast method is to be derived and described as follows. Define

$$\begin{aligned}
M_n(x) &= x^{\deg(t_{2^n-1})} \begin{pmatrix} t_{2^n-1}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times x^{\deg(t_{2^n-2})} \begin{pmatrix} t_{2^n-2}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times\\
&\qquad \cdots \times x^{\deg(t_0)} \begin{pmatrix} t_0(1/x) & 1 \\ 1 & 0 \end{pmatrix},\\
W_n(x) &= x^{\deg(\bar t_{2^n-1})} \begin{pmatrix} \bar t_{2^n-1}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times x^{\deg(\bar t_{2^n-2})} \begin{pmatrix} \bar t_{2^n-2}(1/x) & 1 \\ 1 & 0 \end{pmatrix} \times\\
&\qquad \cdots \times x^{\deg(\bar t_0)} \begin{pmatrix} \bar t_0(1/x) & 1 \\ 1 & 0 \end{pmatrix},
\end{aligned}$$

where $\bar{\mathbf{t}}$ is the (b,a)-Thue-Morse sequence. By the properties of the Thue-Morse sequence, we have for $n \geq 0$

$$M_{n+1}(x) = W_n(x) \cdot M_n(x),$$
$$W_{n+1}(x) = M_n(x) \cdot W_n(x).$$

Let $x := 1/z$. For each non-zero polynomial $P(z)$, define $\tilde{P}(x)$ to be $P(1/x)$. Then,

$$\mathrm{CF}_n(a,b) = \frac{P_n(z)}{Q_n(z)} = \frac{\tilde{P}_n(x)}{\tilde{Q}_n(x)} \in \mathbb{F}_2((x)) = \mathbb{F}_2((1/z)).$$

Comparing the definition of $M_n(x)$ with the definition of $P_n(x)$ and $Q_n(x)$, we see that

$$M_n(x)_{0,1} = x^{d_n} \tilde{P}_{2^n-1}(x),$$
$$M_n(x)_{0,0} = x^{d_n} \tilde{Q}_{2^n-1}(x),$$

for some positive integer d_n. Hence,

$$\mathrm{CF}_{2^{2n}-1}(a,b) = \frac{\tilde{P}_{2^{2n}-1}(x)}{\tilde{Q}_{2^{2n}-1}(x)} = \frac{M_{2n}(x)_{0,1}}{M_{2n}(x)_{0,0}}. \tag{2.2}$$

Therefore, by the convergence theorem of continued fraction, the algebraicity of $\mathrm{CF}(a,b)$ will be established if it is shown that both $M_{2n}(x)_{0,1}$ and $M_{2n}(x)_{0,0}$ converge to algebraic series in $\mathbb{F}_2[[x]]$.

Actually, we will prove that for all $0 \leq i,j \leq 1$ the four sequences $(M_{2n}(x)_{i,j})_n$, $(M_{2n+1}(x)_{i,j})_n$, $(W_{2n}(x)_{i,j})_n$, and $(W_{2n+1}(x)_{i,j})_n$ converge to algebraic series in $\mathbb{F}_2[[x]]$. For this purpose, we define four 2×2 matrices M^e, M^o, W^e, W^o as follows: For each $T \in \{M^e, M^o, W^e, W^o\}$ and $0 \leq i,j \leq 1$, $T_{i,j}$ is defined to be the unique solution in $\mathbb{F}_2[[x]]$ of the polynomial $\phi(T,i,j)$ under certain initial conditions; the polynomials $\phi(T,i,j)$ and initial conditions are given in Section 3. We will prove that these four matrices, whose components are algebraic by definition, are the limits of $(M_{2n}(x))_n$, $(M_{2n+1}(x))_n$, $(W_{2n}(x))_n$, and $(W_{2n+1}(x))_n$.

Let us explain how the polynomials $\phi(T,i,j)$ and initial conditions are found, and why the solutions exist and are unique. For $0 \leq i,j \leq 1$, the the coefficients of the polynomial $\phi(M^e,i,j)$ (resp. $\phi(M^o,i,j)$, $\phi(W^e,i,j)$, and $\phi(W^o,i,j)$) are the Padé-Hermite approximants of type

$$(175, 175, 175, 175, 175)$$

of the vector

$$(1, T^3, T^6, T^9, T^{12}),$$

where $T = M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$), found by the Derksen algorithm. We take the first 8 terms of $M_{12,i,j}$ (resp. $M_{11,i,j}$, $W_{12,i,j}$, and $W_{11,i,j}$) as initial conditions for $\phi(M^e,i,j)$ (resp. $\phi(M^o,i,j)$, $\phi(W^e,i,j)$, and $\phi(W^o,i,j)$). The following fact will be used to ensure that the solution exists and is unique: let $P(x,y) \in \mathbb{F}_2[x,y]$ and for each series $f(x) = \sum_{n=0}^{\infty} a_n x^n \in \mathbb{F}_2[[x]]$ denote the partial sum $\sum_{j=0}^{n-1} a_j x^j$ by $f_n(x)$ for $n \geq 0$. If for some $n \geq 0$ and $a_0, a_1, \ldots, a_{n-1} \in \mathbb{F}_2$ $P(x, \sum_{j=0}^{n-1} a_j x^j) = O(x^n)$ and $Q(x,y) := P(x, \sum_{j=0}^{n-1} a_j x^j + x^n y)$ can be written as $x^m \sum_{j=0}^{\infty} q_j(x) y^j$ where $q_j(x)$ are polynomials for $j \geq 0$, $q_1(0) = 1$, and $q_j(0) = 0$ for $j > 1$, then there exists a unique solution $f(x) \in \mathbb{F}_2[[x]]$ of $P(x, f(x)) = 0$ that satisfies the initial condition $f_n(x) = \sum_{j=0}^{n-1} a_j x^j$.

We state two lemmas concerning the four matrices M^e, M^o, W^e, W^o. The first one is about relations between them; the second, about the structure of the each matrix.

Lemma 2.1. *We have*

$$M^e = W^o \cdot M^o, \tag{2.3}$$

$$M^o = W^e \cdot M^e, \tag{2.4}$$

$$W^e = M^o \cdot W^o, \tag{2.5}$$

$$W^o = M^e \cdot W^e. \tag{2.6}$$

Proof. We give the proof of the identity

$$M^e_{0,0} = W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0},$$

the proofs of the others being similar.

First, we compute the minimal polynomials of $W^o_{0,0}M^o_{0,0}$ and $W^o_{0,1}M^o_{1,0}$. We know that

$$P(x,y) = \mathrm{Res}_z\left(\phi(W^o,0,0)(x,z),\ z^{12}\cdot\phi(M^o,0,0)(x,y/z)\right)$$

is an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We use Padé-Hermite approximation to find a candidate for the minimal polynomial of $W^o_{0,0}M^o_{0,0}$, that will be called $\phi_0(x,y)$. To prove that $\phi_0(x,y)$ is indeed the minimal polynomial, it suffices to prove that it is an irreducible factor of $P(x,y)$ of multiplicity m and that $Q(x,y) := P(x,y)/\phi_0(x,y)^m$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We verify the first point directly. For the second point, we truncate $W^o_{0,0}M^o_{0,0}$ to order 630 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 630, which proves that $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}$. We find the minimal polynomial $\phi_1(x,y)$ of $W^o_{0,1}M^o_{1,0}$ in a similar way.

Now we prove that $\phi(M^e,0,0)$ is the minimal polynomial of $W^o_{0,0}M^o_{0,0}+W^o_{0,1}M^o_{1,0}$. We know that

$$S(x,y) = \mathrm{Res}_z\left(\phi_0(x,z),\ \phi_1(x,y+z)\right)$$

is an annihilating of $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$. We verify that $\phi(M^e,0,0)$ is an irreducible factor of $S(x,y)$ of multiplicity μ, and that $Q(x,y) := S(x,y)/\phi(M^e,0,0)^\mu$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0}+W^o_{0,1}M^o_{1,0}$. To see the last point, we truncate $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$ to order 770 and substitute it for y in $Q(x,y)$. We get a series of valuation less than 770, and therefore $Q(x,y)$ is not an annihilating polynomial of $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$.

Finally, the first 16 terms of $M^e_{0,0}$ and $W^o_{0,0}M^o_{0,0} + W^o_{0,1}M^o_{1,0}$ coincide. As these first terms determine a unique solution of $\phi(M^e,0,0)$, we know that the two series are one and the same. $\square$

Define

$$R^e = \begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix} \qquad \text{and} \qquad R^o = \begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix}.$$

Lemma 2.2. *For all integers $k \geq 2$ and $u = 2^{2k-1}$, the following identities hold.*

$$\begin{aligned}M^e[:14u] = {} & M^e[:7u] + x^{2u}M^e[:5u] + x^{3u}M^e[:4u] + x^{4u}M^e[:3u] + x^{6u}M^e[:u]\\ & + x^{2u}M^e[:7u] + x^{4u}M^e[:5u] + x^{5u}M^e[:4u] + x^{6u}M^e[:3u]\\ & + x^{8u}M^e[:u] + x^{3u}M^e[:7u] + x^{5u}M^e[:5u] + x^{6u}M^e[:4u]\\ & + x^{7u}M^e[:3u] + x^{9u}M^e[:u] + x^{6u}M^e[:7u] + x^{8u}M^e[:5u]\end{aligned}$$

$$
\begin{aligned}
&+ x^{9u}M^e[:4u] + x^{10u}M^e[:3u] + x^{12u}M^e[:u] + x^{7u}M^e[:7u]\\
&+ x^{9u}M^e[:5u] + x^{10u}M^e[:4u] + x^{12u}M^e[:2u] + x^{13u}M^e[:u]\\
&+ (x^{7u} + x^{9u} + x^{10u} + x^{13u})R^e,\\
W^e[:14u] = {}& W^e[:7u] + x^{2u}W^e[:5u] + x^{3u}W^e[:4u] + x^{4u}W^e[:3u] + x^{6u}W^e[:u]\\
&+ x^{2u}W^e[:7u] + x^{4u}W^e[:5u] + x^{5u}W^e[:4u] + x^{6u}W^e[:3u]\\
&+ x^{8u}W^e[:u] + x^{3u}W^e[:7u] + x^{5u}W^e[:5u] + x^{6u}W^e[:4u]\\
&+ x^{7u}W^e[:3u] + x^{9u}W^e[:u] + x^{6u}W^e[:7u] + x^{8u}W^e[:5u]\\
&+ x^{9u}W^e[:4u] + x^{10u}W^e[:3u] + x^{12u}W^e[:u] + x^{7u}W^e[:7u]\\
&+ x^{9u}W^e[:5u] + x^{10u}W^e[:4u] + x^{12u}W^e[:2u] + x^{13u}W^e[:u]\\
&+ (x^{7u} + x^{9u} + x^{10u} + x^{13u})R^e.
\end{aligned}
$$

For all integers $k \geq 2$ and $u = 2^{2k}$, the following identities hold.

$$
\begin{aligned}
M^o[:14u] = {}& M^o[:7u] + x^{2u}M^o[:5u] + x^{3u}M^o[:4u] + x^{4u}M^o[:3u] + x^{6u}M^o[:u]\\
&+ x^{2u}M^o[:7u] + x^{4u}M^o[:5u] + x^{5u}M^o[:4u] + x^{6u}M^o[:3u]\\
&+ x^{8u}M^o[:u] + x^{3u}M^o[:7u] + x^{5u}M^o[:5u] + x^{6u}M^o[:4u]\\
&+ x^{7u}M^o[:3u] + x^{9u}M^o[:u] + x^{6u}M^o[:7u] + x^{8u}M^o[:5u]\\
&+ x^{9u}M^o[:4u] + x^{10u}M^o[:3u] + x^{12u}M^o[:u] + x^{7u}M^o[:7u]\\
&+ x^{9u}M^o[:5u] + x^{10u}M^o[:4u] + x^{12u}M^o[:2u] + x^{13u}M^o[:u]\\
&+ (x^{7u} + x^{9u} + x^{10u} + x^{13u})R^o,\\
W^o[:14u] = {}& W^o[:7u] + x^{2u}W^o[:5u] + x^{3u}W^o[:4u] + x^{4u}W^o[:3u] + x^{6u}W^o[:u]\\
&+ x^{2u}W^o[:7u] + x^{4u}W^o[:5u] + x^{5u}W^o[:4u] + x^{6u}W^o[:3u]\\
&+ x^{8u}W^o[:u] + x^{3u}W^o[:7u] + x^{5u}W^o[:5u] + x^{6u}W^o[:4u]\\
&+ x^{7u}W^o[:3u] + x^{9u}W^o[:u] + x^{6u}W^o[:7u] + x^{8u}W^o[:5u]\\
&+ x^{9u}W^o[:4u] + x^{10u}W^o[:3u] + x^{12u}W^o[:u] + x^{7u}W^o[:7u]\\
&+ x^{9u}W^o[:5u] + x^{10u}W^o[:4u] + x^{12u}W^o[:2u] + x^{13u}W^o[:u]\\
&+ (x^{7u} + x^{9u} + x^{10u} + x^{13u})R^o.
\end{aligned}
$$

Proof. To prove Lemma 2.2 we first construct an automaton for each sequence concerned, and then transform the conditions on infinitely many k's into finitely many conditions on the states of the automaton. In the following, we will prove that for $T = M^o_{0,0}$, for all integer $k \geq 2$ and $u = 2^{2k}$,

$$
\begin{aligned}
T[:14u] = {}& T[:7u] + x^{2u}T[:5u] + x^{3u}T[:4u] + x^{4u}T[:3u] + x^{6u}T[:u] + x^{2u}T[:7u]\\
&+ x^{4u}T[:5u] + x^{5u}T[:4u] + x^{6u}T[:3u] + x^{8u}T[:u] + x^{3u}T[:7u]\\
&+ x^{5u}T[:5u] + x^{6u}T[:4u] + x^{7u}T[:3u] + x^{9u}T[:u] + x^{6u}T[:7u]\\
&+ x^{8u}T[:5u] + x^{9u}T[:4u] + x^{10u}T[:3u] + x^{12u}T[:u] + x^{7u}T[:7u]\\
&+ x^{9u}T[:5u] + x^{10u}T[:4u] + x^{12u}T[:2u] + x^{13u}T[:u].
\end{aligned}
$$

The proof of the other 15 cases are similar. We break down the above identity into 7 parts:

$$
\begin{aligned}
0 &= x^{6u}T[u\!:\!2u] + x^{4u}T[3u\!:\!4u] + x^{3u}T[4u\!:\!5u] + x^{2u}T[5u\!:\!6u] \\
&\quad + T[7u\!:\!8u], \\
0 &= x^{6u}T[2u\!:\!3u] + x^{4u}T[4u\!:\!5u] + x^{3u}T[5u\!:\!6u] + x^{2u}T[6u\!:\!7u] \\
&\quad + T[8u\!:\!9u], \\
0 &= x^{9u}T[:u] + x^{8u}T[u\!:\!2u] + x^{5u}T[4u\!:\!5u] + x^{3u}T[6u\!:\!7u] + T[9u\!:\!10u], \\
0 &= x^{8u}T[2u\!:\!3u] + x^{7u}T[3u\!:\!4u] + x^{6u}T[4u\!:\!5u] + T[10u\!:\!11u], \\
0 &= x^{8u}T[3u\!:\!4u] + x^{7u}T[4u\!:\!5u] + x^{6u}T[5u\!:\!6u] + T[11u\!:\!12u], \\
0 &= x^{8u}T[4u\!:\!5u] + x^{7u}T[5u\!:\!6u] + x^{6u}T[6u\!:\!7u] + T[12u\!:\!13u], \\
0 &= x^{13u}T[:u] + x^{12u}T[u\!:\!2u] + x^{10u}T[3u\!:\!4u] + x^{9u}T[4u\!:\!5u] \\
&\quad + x^{7u}T[6u\!:\!7u] + T[13u\!:\!14u],
\end{aligned}
$$

which can be rewritten as

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.7}$$
$$0 = T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.8}$$
$$0 = T[[w]_2] + T[[1w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.9}$$
$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.10}$$
$$0 = T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1011w]_2], \tag{2.11}$$
$$0 = T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.12}$$
$$\begin{aligned} 0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] \\ &\quad + T[[1101w]_2], \end{aligned} \tag{2.13}$$

for all binary word w of length $2k$ and $w \neq 0^{2k}$, and

$$0 = T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[111w]_2], \tag{2.14}$$
$$0 = T[[10w]_2] + T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1000w]_2], \tag{2.15}$$
$$0 = T[[w]_2] + T[[1w]_2] + T[[100w]_2] + T[[110w]_2] + T[[1001w]_2], \tag{2.16}$$
$$0 = T[[10w]_2] + T[[11w]_2] + T[[100w]_2] + T[[1010w]_2], \tag{2.17}$$
$$0 = T[[11w]_2] + T[[100w]_2] + T[[101w]_2] + T[[1011w]_2], \tag{2.18}$$
$$0 = T[[100w]_2] + T[[101w]_2] + T[[110w]_2] + T[[1100w]_2], \tag{2.19}$$
$$\begin{aligned} 0 &= T[[w]_2] + T[[1w]_2] + T[[11w]_2] + T[[100w]_2] + T[[110w]_2] \\ &\quad + T[[1101w]_2], \end{aligned} \tag{2.20}$$

for $w = 0^{2k}$.

First we calculate an 2-automaton that generates T from its minimal polynomial and its first terms. This automaton has 4386 states; its transition function and output function can be found in the annex. Let $A(s, w)$ denote the state reached after reading w from right to left starting from the state s, and τ the output function. Define

$$E_{2k} = \{A(i, w) : |w| = 2k, w \neq 0^{2k}\}.$$

Identities (2.7) through (2.20) can be written as

$$\begin{aligned} 0 &= \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\ &\quad + \tau(A(s,111)), \end{aligned} \tag{2.21}$$

$$\begin{aligned} 0 &= \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,110)) \\ &\quad + \tau(A(s,1000)), \end{aligned} \tag{2.22}$$

$$\begin{aligned} 0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,100)) + \tau(A(s,110)) \\ &\quad + \tau(A(s,1001)), \end{aligned} \tag{2.23}$$

$$0 = \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,1010)), \tag{2.24}$$

$$0 = \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,1011)), \tag{2.25}$$

$$0 = \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1100)), \tag{2.26}$$

$$\begin{aligned} 0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1101)), \end{aligned} \tag{2.27}$$

for all $s \in E_{2k}$, and

$$\begin{aligned} 0 &= \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) \\ &\quad + \tau(A(s,111)), \end{aligned} \tag{2.28}$$

$$\begin{aligned} 0 &= \tau(A(s,10)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,110)) \\ &\quad + \tau(A(s,1000)), \end{aligned} \tag{2.29}$$

$$\begin{aligned} 0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,100)) + \tau(A(s,110)) \\ &\quad + \tau(A(s,1001)), \end{aligned} \tag{2.30}$$

$$0 = \tau(A(s,10)) + \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,1010)), \tag{2.31}$$

$$0 = \tau(A(s,11)) + \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,1011)), \tag{2.32}$$

$$0 = \tau(A(s,100)) + \tau(A(s,101)) + \tau(A(s,110)) + \tau(A(s,1100)), \tag{2.33}$$

$$\begin{aligned} 0 &= \tau(A(s,\epsilon)) + \tau(A(s,1)) + \tau(A(s,11)) + \tau(A(s,100)) \\ &\quad + \tau(A(s,110)) + \tau(A(s,1101)), \end{aligned} \tag{2.34}$$

for $s = A(i, 0^{2k})$. We find that $(A(i, 0^{28}), E_{28}) = (A(i, 0^{20}), E_{20})$, so that we only have to verify that identities (2.21) through (2.34) hold for $2 \le k \le 14$, which turns out to be true. $\square$

In the following lemma, we express M_{2k}, M_{2k+1}, W_{2k}, and W_{2k+1} in terms of M^e, M^o, W^e, and W^o.

Lemma 2.3. *For all integer $k \ge 2$, and $u = 2^{2k-1}$,*

$$\begin{aligned} M_{2k} &= M^e[:7u] + x^{2u}M^e[:5u] + x^{3u}M^e[:4u] + x^{4u}M^e[:3u] + x^{6u}M^e[:u] \\ &\quad + x^{7u}R^e, \\ W_{2k} &= W^e[:7u] + x^{2u}W^e[:5u] + x^{3u}W^e[:4u] + x^{4u}W^e[:3u] + x^{6u}W^e[:u] \\ &\quad + x^{7u}R^e. \end{aligned}$$

For all integer $k \ge 2$, and $u = 2^{2k}$,

$$\begin{aligned} M_{2k+1} &= M^o[:7u] + x^{2u}M^o[:5u] + x^{3u}M^o[:4u] + x^{4u}M^o[:3u] + x^{6u}M^o[:u] \\ &\quad + x^{7u}R^o, \end{aligned}$$

$$\begin{aligned}W_{2k+1} &= W^o[:7u] + x^{2u}W^o[:5u] + x^{3u}W^o[:4u] + x^{4u}W^o[:3u] + x^{6u}W^o[:u]\\ &\quad + x^{7u}R^o.\end{aligned}$$

Proof. We call the four identities in Lemma 2.3 also by the name M_{2k}, W_{2k}, M_{2k+1}, and W_{2k+1}. For $n = 2$, the identities can be verified directly. For $n \geq 2$, we claim that

$$\begin{aligned}M_{2k} \wedge W_{2k} &\Rightarrow M_{2k+1} \wedge W_{2k+1},\\ M_{2k+1} \wedge W_{2k+1} &\Rightarrow M_{2k+2} \wedge W_{2k+2}.\end{aligned}$$

We give the proof of

$$M_{2k} \wedge W_{2k} \Rightarrow M_{2k+1},$$

the other ones being similar. Set $u = 2^{2k}$ and $v = 2^{2k-1}$. By definition and induction hypothesis, the left side of identity M_{2k+1} is equal to

$$\begin{aligned}W_{2k}M_{2k} &= \big(W^e[:7v] + x^{2v}W^e[:5v] + x^{3v}W^e[:4v] + x^{4v}W^e[:3v] + x^{6v}W^e[:v]\\ &\quad + x^{7u}R^e\big) \times \big(M^e[:7v] + x^{2v}M^e[:5v] + x^{3v}M^e[:4v] + x^{4v}M^e[:3v]\\ &\quad + x^{6v}M^e[:v] + x^{7u}R^e\big);\end{aligned} \tag{2.35}$$

Call this expression lhs. Note that both sides of identity M_{2k+1} have the same term of highest degree $x^{14v}R^o$. Therefore we only need to prove that their difference is $O(x^{14v})$. Using Lemma 2.1 it can be seen that the right side of identity M_{2k+1} is congruent, modulo x^{14v}, to

$$\begin{aligned}&W^e[:14v]M^e[:14v] + x^{4v}W^e[:10v]M^e[:10v] + x^{6v}W^e[:8v]M^e[:8v]\\ &\qquad + x^{8v}W^e[:6v]M^e[:6v] + x^{12v}W^e[:2v]M^e[:2v].\end{aligned}$$

For all $n \leq 14$, replace the occurrences of $W^e[:n \cdot v]$ and $M^e[:n \cdot v]$ in the above expression by the reduction modulo $x^{n \cdot v}$ of the right side of the corresponding identity in Lemma 2.2 and get a new expression, which we call rhs. Define

$$\begin{aligned}X &:= x^v,\\ a_n &:= W^e[n \cdot v : (n+1) \cdot v]/X^n,\\ b_n &:= M^e[n \cdot v : (n+1) \cdot v]/X^n,\\ c &:= R^e.\end{aligned}$$

Using the notation introduced above, we can represent the expressions lhs (2.35) and rhs as polynomials in $\mathbb{F}_2[a_1, ..., a_{14}, b_1, ..., b_{14}, c][X]$. Note that it is not a problem that a_j commutes with b_k while W^e does not commute with M^e, because in the expressions concerned, the products of W^e-terms and M^e-terms are always in the same order. We let the computer do the simplification and check that the difference between these two polynomials is indeed $O(X^{14})$, which completes the proof. $\square$

Proof of Theorem 1.1. We prove the theorem for $\mathrm{CF}(a, b)$; for $\mathrm{CF}(b, a)$, the proof is similar. By Lemma 2.3, we have For all $0 \leq j, k \leq 1$,

$$\begin{aligned}\lim_{n\to\infty} M_{2n,j,k} &= M^e_{j,k},\\ \lim_{n\to\infty} M_{2n+1,j,k} &= M^o_{j,k},\\ \lim_{n\to\infty} W_{2n,j,k} &= W^e_{j,k},\\ \lim_{n\to\infty} W_{2n+1,j,k} &= W^o_{j,k}.\end{aligned}$$

Let $z = 1/x$. By the convergence theorem and identity (2.2),

$$\mathrm{CF}(a,b) = \frac{M^e_{0,1}(x)}{M^e_{0,0}(x)}.$$

By definition, $\phi(M^e, 0, 1)$ and $\phi(M^e, 0, 0)$ are minimal polynomials of $M^e_{0,1}$ and $M^e_{0,0}$. Therefore

$$P(x,y) = \mathrm{Res}_t\left(\phi(M^e,0,1)(x,t), y^{12}\phi(M^e,0,1)(x,t/y)\right)$$

is an annihilating polynomial of $f(x) = M^e_{0,1}/M^e_{0,0}$.

Define

$$Q(x,y) = q_4(x)y^4 + q_3(x)y^3 + q_2(x)y^2 + q_1(x)y + q_0(x),$$

where

$$\begin{aligned}
q_0(x) &= x^{28} + x^{25} + x^{21} + x^{20} + x^{18} + x^{17} + x^{15} + x^{13} + x^{12} + x^{10} + x^9 + x^7,\\
q_1(x) &= x^{25} + x^{22} + x^{19} + x^{18} + x^{17} + x^{14} + x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^6\\
&\quad + x^4 + x^3,\\
q_2(x) &= x^{22} + x^{18} + x^6 + 1,\\
q_3(x) &= x^{25} + x^{22} + x^{19} + x^{18} + x^{17} + x^{14} + x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^6\\
&\quad + x^4 + x^3,\\
q_4(x) &= x^{25} + x^{24} + x^{22} + x^{21} + x^{17} + x^{15} + x^{13} + x^{12} + x^{10} + x^9 + x^8 + x^7\\
&\quad + x^6.
\end{aligned}$$

The polynomial $Q(x,y)$ is the candidate for the minimal polynomial of $f(x)$ found by Padé-Hermite approximation. To prove that it is indeed the minimal polynomial of $f(x)$, we only need to prove that it is an irreducible factor of $P(x,y)$ of multiplicity m and $R(x,y) := P(x,y)/Q(x,y)^m$ is not an annihilating polynomial of $f(x)$. We verify the first point directly. For the second point, we find that when we truncate $f(x)$ to order 216, and substitute it for y in $R(z,y)$, we get a series with valuation smaller than 216, which proves that $R(z,y)$ is not an annihilating polynomial of $f(x)$. Finally, $z^{12}Q(1/z,y)$ is the minimal polynomial of $\mathrm{CF}(a,b) = f(1/z)$. □

3. Annexe

All 16 polynomials are of the form

$$p_0(x) + p_3(x)y^3 + p_6(x)y^6 + p_9(x)y^9 + p_{12}(x)y^{12}.$$

The coefficients $p_j(x)$ and the 16 initial terms to determine the solutions uniquely are given below.

For $\phi(M^e, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{150} + x^{148} + x^{146} + x^{142} + x^{140} + x^{136} + x^{130} + x^{128} + x^{126} + x^{124}\\
&\quad + x^{116} + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{90} + x^{82}\\
&\quad + x^{78} + x^{74} + x^{72} + x^{68} + x^{64} + x^{60} + x^{56} + x^{50} + x^{44} + x^{38} + x^{36},\\
p_3(x) &= x^{142} + x^{138} + x^{134} + x^{132} + x^{130} + x^{128} + x^{122} + x^{120} + x^{118} + x^{116}\\
&\quad + x^{114} + x^{112} + x^{108} + x^{106} + x^{100} + x^{94} + x^{88} + x^{86} + x^{84} + x^{72}\\
&\quad + x^{68} + x^{66} + x^{62} + x^{60} + x^{58} + x^{54} + x^{46} + x^{44} + x^{42} + x^{38} + x^{30}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{26} + x^{22} + x^{20},\\
p_6(x) &= x^{142} + x^{136} + x^{134} + x^{128} + x^{126} + x^{122} + x^{110} + x^{106} + x^{102} + x^{100}\\
&+ x^{92} + x^{90} + x^{86} + x^{84} + x^{80} + x^{78} + x^{74} + x^{72} + x^{60} + x^{50} + x^{46}\\
&+ x^{44} + x^{42} + x^{34} + x^{32} + x^{30} + x^{26} + x^{22} + x^{18} + x^{8} + x^{6} + 1,\\
p_9(x) &= x^{144} + x^{138} + x^{136} + x^{126} + x^{120} + x^{116} + x^{108} + x^{104} + x^{102} + x^{100}\\
&+ x^{92} + x^{90} + x^{88} + x^{86} + x^{78} + x^{74} + x^{72} + x^{64} + x^{62} + x^{58} + x^{56}\\
&+ x^{52} + x^{50} + x^{46} + x^{44} + x^{42} + x^{34} + x^{32} + x^{30} + x^{28} + x^{24} + x^{22}\\
&+ x^{20} + x^{18} + x^{16} + x^{14} + x^{8} + x^{6},\\
p_{12}(x) &= x^{144} + x^{136} + x^{120} + x^{112} + x^{104} + x^{80} + x^{64} + x^{56} + x^{48} + x^{24} + x^{16}\\
&+ 1,
\end{aligned}
$$

and the initial terms are [1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0].

For $\phi(M^e, 0, 1)$:

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{132}\\
&+ x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{123} + x^{121} + x^{119} + x^{118}\\
&+ x^{116} + x^{114} + x^{111} + x^{110} + x^{108} + x^{107} + x^{104} + x^{101} + x^{100}\\
&+ x^{98} + x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} + x^{82} + x^{79}\\
&+ x^{76} + x^{75} + x^{72} + x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60}\\
&+ x^{58} + x^{56} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{40} + x^{39},\\
p_3(x) &= x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{121} + x^{120}\\
&+ x^{117} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{100}\\
&+ x^{99} + x^{97} + x^{96} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{82} + x^{81} + x^{79}\\
&+ x^{78} + x^{77} + x^{76} + x^{75} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54}\\
&+ x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39}\\
&+ x^{38} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27},\\
p_6(x) &= x^{138} + x^{137} + x^{136} + x^{133} + x^{131} + x^{127} + x^{125} + x^{124} + x^{123} + x^{122}\\
&+ x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{114} + x^{110} + x^{109} + x^{107}\\
&+ x^{104} + x^{100} + x^{99} + x^{97} + x^{93} + x^{92} + x^{90} + x^{86} + x^{85} + x^{83} + x^{82}\\
&+ x^{81} + x^{80} + x^{79} + x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{64}\\
&+ x^{62} + x^{60} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{47}\\
&+ x^{45} + x^{42} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26}\\
&+ x^{25} + x^{23} + x^{22} + x^{21} + x^{18},\\
p_9(x) &= x^{135} + x^{134} + x^{133} + x^{132} + x^{130} + x^{127} + x^{125} + x^{122} + x^{121} + x^{115}\\
&+ x^{114} + x^{111} + x^{108} + x^{106} + x^{102} + x^{100} + x^{97} + x^{95} + x^{93} + x^{90}\\
&+ x^{88} + x^{85} + x^{83} + x^{80} + x^{79} + x^{77} + x^{76} + x^{72} + x^{71} + x^{69} + x^{68}\\
&+ x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{49} + x^{48} + x^{47}
\end{aligned}
$$

$$+ x^{46} + x^{44} + x^{41} + x^{39} + x^{37} + x^{35} + x^{32} + x^{31} + x^{15} + x^{14} + x^{10} + x^{9},$$

$$p_{12}(x) = x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,$$

and the initial terms are [0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0].

For $\phi(M^e, 1, 0)$:

$$p_0(x) = x^{147} + x^{145} + x^{144} + x^{141} + x^{140} + x^{138} + x^{136} + x^{135} + x^{134} + x^{132} + x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{123} + x^{121} + x^{119} + x^{118} + x^{116} + x^{114} + x^{111} + x^{110} + x^{108} + x^{107} + x^{104} + x^{101} + x^{100} + x^{98} + x^{96} + x^{95} + x^{94} + x^{91} + x^{89} + x^{86} + x^{85} + x^{84} + x^{82} + x^{79} + x^{76} + x^{75} + x^{72} + x^{70} + x^{69} + x^{67} + x^{65} + x^{64} + x^{63} + x^{61} + x^{60} + x^{58} + x^{56} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{40} + x^{39},$$

$$p_3(x) = x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{121} + x^{120} + x^{117} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{100} + x^{99} + x^{97} + x^{96} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27},$$

$$p_6(x) = x^{138} + x^{137} + x^{136} + x^{133} + x^{131} + x^{127} + x^{125} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{114} + x^{110} + x^{109} + x^{107} + x^{104} + x^{100} + x^{99} + x^{97} + x^{93} + x^{92} + x^{90} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{79} + x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{60} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{18},$$

$$p_9(x) = x^{135} + x^{134} + x^{133} + x^{132} + x^{130} + x^{127} + x^{125} + x^{122} + x^{121} + x^{115} + x^{114} + x^{111} + x^{108} + x^{106} + x^{102} + x^{100} + x^{97} + x^{95} + x^{93} + x^{90} + x^{88} + x^{85} + x^{83} + x^{80} + x^{79} + x^{77} + x^{76} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{49} + x^{48} + x^{47} + x^{46} + x^{44} + x^{41} + x^{39} + x^{37} + x^{35} + x^{32} + x^{31} + x^{15} + x^{14} + x^{10} + x^{9},$$

$$p_{12}(x) = x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111}$$

$$+ x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88}$$
$$+ x^{84} + x^{83} + x^{82} + x^{80} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42}$$
$$+ x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11}$$
$$+ x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,$$

and the initial terms are [0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0].

For $\phi(M^e, 1, 1)$:

$$\begin{aligned}
p_0(x) &= x^{144} + x^{142} + x^{140} + x^{138} + x^{136} + x^{128} + x^{124} + x^{122} + x^{120} + x^{114}\\
&\quad + x^{112} + x^{110} + x^{104} + x^{84} + x^{82} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{62}\\
&\quad + x^{60} + x^{52} + x^{50} + x^{42},\\
p_3(x) &= x^{126} + x^{124} + x^{122} + x^{120} + x^{116} + x^{114} + x^{108} + x^{104} + x^{102} + x^{92}\\
&\quad + x^{86} + x^{84} + x^{82} + x^{80} + x^{72} + x^{64} + x^{56} + x^{52} + x^{50} + x^{44} + x^{40}\\
&\quad + x^{38} + x^{36} + x^{34} + x^{32} + x^{28} + x^{26} + x^{24} + x^{22} + x^{18},\\
p_6(x) &= x^{126} + x^{124} + x^{122} + x^{118} + x^{112} + x^{106} + x^{98} + x^{96} + x^{94} + x^{86}\\
&\quad + x^{82} + x^{74} + x^{72} + x^{70} + x^{66} + x^{64} + x^{60} + x^{52} + x^{46} + x^{44} + x^{40}\\
&\quad + x^{34} + x^{32} + x^{24} + x^{22} + x^{18} + x^{12} + x^{10} + x^{4} + 1,\\
p_9(x) &= x^{120} + x^{118} + x^{116} + x^{114} + x^{110} + x^{102} + x^{96} + x^{90} + x^{84} + x^{82}\\
&\quad + x^{80} + x^{78} + x^{76} + x^{72} + x^{70} + x^{66} + x^{62} + x^{48} + x^{46} + x^{42} + x^{30}\\
&\quad + x^{24} + x^{22} + x^{20} + x^{14} + x^{10} + x^{8} + x^{6},\\
p_{12}(x) &= x^{120} + x^{118} + x^{116} + x^{112} + x^{104} + x^{102} + x^{100} + x^{96} + x^{88} + x^{86}\\
&\quad + x^{84} + x^{80} + x^{40} + x^{38} + x^{36} + x^{32} + x^{8} + x^{6} + x^{4} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0].

For $\phi(W^e, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{144} + x^{142} + x^{140} + x^{138} + x^{136} + x^{132} + x^{130} + x^{122} + x^{118} + x^{114}\\
&\quad + x^{112} + x^{110} + x^{108} + x^{104} + x^{100} + x^{98} + x^{96} + x^{92} + x^{88} + x^{86}\\
&\quad + x^{80} + x^{74} + x^{72} + x^{64} + x^{56} + x^{54} + x^{46} + x^{44} + x^{40} + x^{38} + x^{36},\\
p_3(x) &= x^{126} + x^{124} + x^{122} + x^{120} + x^{116} + x^{112} + x^{110} + x^{106} + x^{104} + x^{100}\\
&\quad + x^{98} + x^{96} + x^{94} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{80} + x^{76} + x^{74}\\
&\quad + x^{72} + x^{70} + x^{68} + x^{66} + x^{60} + x^{56} + x^{54} + x^{52} + x^{38} + x^{36} + x^{34}\\
&\quad + x^{26} + x^{24} + x^{22} + x^{20},\\
p_6(x) &= x^{126} + x^{124} + x^{122} + x^{118} + x^{114} + x^{110} + x^{106} + x^{104} + x^{102} + x^{96}\\
&\quad + x^{94} + x^{92} + x^{90} + x^{86} + x^{84} + x^{82} + x^{78} + x^{74} + x^{72} + x^{64} + x^{62}\\
&\quad + x^{60} + x^{52} + x^{48} + x^{44} + x^{42} + x^{30} + x^{28} + x^{24} + x^{20} + x^{18} + x^{10}\\
&\quad + x^{4} + 1,\\
p_9(x) &= x^{120} + x^{118} + x^{116} + x^{114} + x^{110} + x^{102} + x^{96} + x^{90} + x^{84} + x^{82}\\
&\quad + x^{80} + x^{78} + x^{76} + x^{72} + x^{70} + x^{66} + x^{62} + x^{48} + x^{46} + x^{42} + x^{30}
\end{aligned}$$

$$+ x^{24} + x^{22} + x^{20} + x^{14} + x^{10} + x^{8} + x^{6},$$

$$p_{12}(x) = x^{120} + x^{118} + x^{116} + x^{112} + x^{104} + x^{102} + x^{100} + x^{96} + x^{88} + x^{86} + x^{84} + x^{80} + x^{40} + x^{38} + x^{36} + x^{32} + x^{8} + x^{6} + x^{4} + 1,$$

and the initial terms are [1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0].

For $\phi(W^e, 0, 1)$:

$$p_0(x) = x^{147} + x^{145} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} + x^{131} + x^{130} + x^{129} + x^{128} + x^{125} + x^{122} + x^{120} + x^{117} + x^{116} + x^{115} + x^{108} + x^{107} + x^{103} + x^{102} + x^{100} + x^{99} + x^{90} + x^{89} + x^{88} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71} + x^{68} + x^{67} + x^{66} + x^{62} + x^{60} + x^{56} + x^{52} + x^{51} + x^{48} + x^{45} + x^{44} + x^{40} + x^{39},$$

$$p_3(x) = x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{121} + x^{120} + x^{117} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{100} + x^{99} + x^{97} + x^{96} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27},$$

$$p_6(x) = x^{138} + x^{137} + x^{136} + x^{133} + x^{131} + x^{127} + x^{125} + x^{124} + x^{123} + x^{122} + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{114} + x^{110} + x^{109} + x^{107} + x^{104} + x^{100} + x^{99} + x^{97} + x^{93} + x^{92} + x^{90} + x^{86} + x^{85} + x^{83} + x^{82} + x^{81} + x^{80} + x^{79} + x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{60} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{47} + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} + x^{25} + x^{23} + x^{22} + x^{21} + x^{18},$$

$$p_9(x) = x^{135} + x^{134} + x^{133} + x^{132} + x^{130} + x^{127} + x^{125} + x^{122} + x^{121} + x^{115} + x^{114} + x^{111} + x^{108} + x^{106} + x^{102} + x^{100} + x^{97} + x^{95} + x^{93} + x^{90} + x^{88} + x^{85} + x^{83} + x^{80} + x^{79} + x^{77} + x^{76} + x^{72} + x^{71} + x^{69} + x^{68} + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{49} + x^{48} + x^{47} + x^{46} + x^{44} + x^{41} + x^{39} + x^{37} + x^{35} + x^{32} + x^{31} + x^{15} + x^{14} + x^{10} + x^{9},$$

$$p_{12}(x) = x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111} + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,$$

and the initial terms are [0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 1, 1].

For $\phi(W^e, 1, 0)$:

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{143} + x^{141} + x^{139} + x^{138} + x^{137} + x^{136} + x^{135} + x^{134} \\
& + x^{133} + x^{132} + x^{131} + x^{130} + x^{129} + x^{128} + x^{125} + x^{122} + x^{120} \\
& + x^{117} + x^{116} + x^{115} + x^{108} + x^{107} + x^{103} + x^{102} + x^{100} + x^{99} + x^{90} \\
& + x^{89} + x^{88} + x^{83} + x^{81} + x^{80} + x^{79} + x^{78} + x^{76} + x^{73} + x^{72} + x^{71} \\
& + x^{68} + x^{67} + x^{66} + x^{62} + x^{60} + x^{56} + x^{52} + x^{51} + x^{48} + x^{45} + x^{44} \\
& + x^{40} + x^{39}, \\
p_3(x) = {} & x^{141} + x^{140} + x^{139} + x^{138} + x^{136} + x^{135} + x^{134} + x^{133} + x^{121} + x^{120} \\
& + x^{117} + x^{114} + x^{112} + x^{111} + x^{110} + x^{109} + x^{105} + x^{104} + x^{100} \\
& + x^{99} + x^{97} + x^{96} + x^{93} + x^{90} + x^{89} + x^{87} + x^{86} + x^{82} + x^{81} + x^{79} \\
& + x^{78} + x^{77} + x^{76} + x^{75} + x^{61} + x^{60} + x^{59} + x^{58} + x^{56} + x^{55} + x^{54} \\
& + x^{52} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44} + x^{43} + x^{42} + x^{41} + x^{39} \\
& + x^{38} + x^{34} + x^{33} + x^{31} + x^{30} + x^{29} + x^{28} + x^{27}, \\
p_6(x) = {} & x^{138} + x^{137} + x^{136} + x^{133} + x^{131} + x^{127} + x^{125} + x^{124} + x^{123} + x^{122} \\
& + x^{121} + x^{120} + x^{119} + x^{118} + x^{117} + x^{114} + x^{110} + x^{109} + x^{107} \\
& + x^{104} + x^{100} + x^{99} + x^{97} + x^{93} + x^{92} + x^{90} + x^{86} + x^{85} + x^{83} + x^{82} \\
& + x^{81} + x^{80} + x^{79} + x^{75} + x^{73} + x^{72} + x^{71} + x^{68} + x^{66} + x^{65} + x^{64} \\
& + x^{62} + x^{60} + x^{59} + x^{57} + x^{56} + x^{55} + x^{54} + x^{53} + x^{52} + x^{51} + x^{47} \\
& + x^{45} + x^{42} + x^{40} + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{33} + x^{30} + x^{26} \\
& + x^{25} + x^{23} + x^{22} + x^{21} + x^{18}, \\
p_9(x) = {} & x^{135} + x^{134} + x^{133} + x^{132} + x^{130} + x^{127} + x^{125} + x^{122} + x^{121} + x^{115} \\
& + x^{114} + x^{111} + x^{108} + x^{106} + x^{102} + x^{100} + x^{97} + x^{95} + x^{93} + x^{90} \\
& + x^{88} + x^{85} + x^{83} + x^{80} + x^{79} + x^{77} + x^{76} + x^{72} + x^{71} + x^{69} + x^{68} \\
& + x^{67} + x^{66} + x^{65} + x^{63} + x^{62} + x^{61} + x^{60} + x^{59} + x^{49} + x^{48} + x^{47} \\
& + x^{46} + x^{44} + x^{41} + x^{39} + x^{37} + x^{35} + x^{32} + x^{31} + x^{15} + x^{14} + x^{10} \\
& + x^{9}, \\
p_{12}(x) = {} & x^{132} + x^{131} + x^{130} + x^{127} + x^{126} + x^{123} + x^{122} + x^{120} + x^{112} + x^{111} \\
& + x^{110} + x^{107} + x^{106} + x^{104} + x^{96} + x^{95} + x^{94} + x^{91} + x^{90} + x^{88} \\
& + x^{84} + x^{83} + x^{82} + x^{80} + x^{52} + x^{51} + x^{50} + x^{47} + x^{46} + x^{43} + x^{42} \\
& + x^{40} + x^{36} + x^{35} + x^{34} + x^{32} + x^{20} + x^{19} + x^{18} + x^{15} + x^{14} + x^{11} \\
& + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 1, 1].

For $\phi(W^e, 1, 1)$:

$$p_0(x) = x^{150} + x^{148} + x^{146} + x^{144} + x^{142} + x^{138} + x^{136} + x^{132} + x^{128} + x^{126}$$

$$
\begin{aligned}
&+ x^{120} + x^{118} + x^{116} + x^{114} + x^{112} + x^{104} + x^{102} + x^{100} + x^{88} + x^{86}\\
&+ x^{84} + x^{80} + x^{78} + x^{72} + x^{68} + x^{66} + x^{64} + x^{56} + x^{54} + x^{50} + x^{48}\\
&+ x^{46} + x^{42},\\
p_3(x) &= x^{142} + x^{134} + x^{130} + x^{128} + x^{124} + x^{122} + x^{118} + x^{116} + x^{112} + x^{110}\\
&+ x^{108} + x^{106} + x^{104} + x^{98} + x^{92} + x^{90} + x^{88} + x^{86} + x^{84} + x^{74} + x^{72}\\
&+ x^{66} + x^{62} + x^{56} + x^{54} + x^{52} + x^{44} + x^{38} + x^{36} + x^{34} + x^{32} + x^{30}\\
&+ x^{28} + x^{18},\\
p_6(x) &= x^{142} + x^{138} + x^{136} + x^{134} + x^{128} + x^{126} + x^{122} + x^{116} + x^{114} + x^{112}\\
&+ x^{108} + x^{106} + x^{104} + x^{102} + x^{100} + x^{98} + x^{96} + x^{94} + x^{88} + x^{86}\\
&+ x^{80} + x^{78} + x^{72} + x^{60} + x^{58} + x^{52} + x^{50} + x^{48} + x^{40} + x^{36} + x^{32}\\
&+ x^{30} + x^{28} + x^{24} + x^{20} + x^{16} + x^{12} + x^{8} + x^{6} + 1,\\
p_9(x) &= x^{144} + x^{138} + x^{136} + x^{126} + x^{120} + x^{116} + x^{108} + x^{104} + x^{102} + x^{100}\\
&+ x^{92} + x^{90} + x^{88} + x^{86} + x^{78} + x^{74} + x^{72} + x^{64} + x^{62} + x^{58} + x^{56}\\
&+ x^{52} + x^{50} + x^{46} + x^{44} + x^{42} + x^{34} + x^{32} + x^{30} + x^{28} + x^{24} + x^{22}\\
&+ x^{20} + x^{18} + x^{16} + x^{14} + x^{8} + x^{6},\\
p_{12}(x) &= x^{144} + x^{136} + x^{120} + x^{112} + x^{104} + x^{80} + x^{64} + x^{56} + x^{48} + x^{24} + x^{16}\\
&+ 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0].

For $\phi(M^o, 0, 0)$:

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{140} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{127}\\
&+ x^{126} + x^{125} + x^{124} + x^{123} + x^{121} + x^{119} + x^{118} + x^{115} + x^{113}\\
&+ x^{107} + x^{106} + x^{105} + x^{104} + x^{103} + x^{100} + x^{98} + x^{97} + x^{96} + x^{92}\\
&+ x^{91} + x^{87} + x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{80} + x^{79} + x^{77} + x^{76}\\
&+ x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61}\\
&+ x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{53} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46}\\
&+ x^{45} + x^{43} + x^{41} + x^{39} + x^{36},\\
p_3(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132}\\
&+ x^{131} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{118} + x^{117}\\
&+ x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{106} + x^{100} + x^{97} + x^{96} + x^{94}\\
&+ x^{93} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} + x^{83} + x^{77} + x^{76} + x^{75} + x^{71}\\
&+ x^{70} + x^{67} + x^{65} + x^{60} + x^{56} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44}\\
&+ x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29}\\
&+ x^{27} + x^{24},\\
p_6(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132}\\
&+ x^{131} + x^{129} + x^{128} + x^{125} + x^{121} + x^{119} + x^{116} + x^{115} + x^{114}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{113} + x^{111} + x^{109} + x^{108} + x^{100} + x^{99} + x^{97} + x^{96} + x^{94} + x^{93}\\
&+ x^{92} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{78} + x^{74} + x^{73} + x^{70} + x^{69}\\
&+ x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{53} + x^{52}\\
&+ x^{51} + x^{39} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22}\\
&+ x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{14} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3}\\
&+ x^{2} + 1,\\
p_9(x) =& x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{131} + x^{130} + x^{128}\\
&+ x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108}\\
&+ x^{107} + x^{106} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{92} + x^{64}\\
&+ x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{44}\\
&+ x^{32} + x^{31} + x^{30} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14}\\
&+ x^{12},\\
p_{12}(x) =& x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{132} + x^{128} + x^{127}\\
&+ x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{111} + x^{110}\\
&+ x^{108} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91} + x^{90}\\
&+ x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55}\\
&+ x^{54} + x^{52} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30}\\
&+ x^{27} + x^{26} + x^{23} + x^{22} + x^{20} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2}\\
&+ 1,
\end{aligned}
$$

and the initial terms are [1, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 0].

For $\phi(M^o, 0, 1)$:

$$
\begin{aligned}
p_0(x) =& x^{152} + x^{148} + x^{143} + x^{142} + x^{139} + x^{138} + x^{137} + x^{131} + x^{130} + x^{129}\\
&+ x^{128} + x^{126} + x^{124} + x^{120} + x^{119} + x^{115} + x^{113} + x^{112} + x^{111}\\
&+ x^{110} + x^{109} + x^{106} + x^{105} + x^{104} + x^{101} + x^{99} + x^{97} + x^{96} + x^{95}\\
&+ x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{80} + x^{79}\\
&+ x^{77} + x^{75} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{62} + x^{60} + x^{57}\\
&+ x^{55} + x^{54} + x^{50} + x^{49} + x^{47} + x^{43} + x^{41} + x^{40} + x^{39},\\
p_3(x) =& x^{131} + x^{128} + x^{125} + x^{124} + x^{119} + x^{118} + x^{116} + x^{112} + x^{109} + x^{108}\\
&+ x^{107} + x^{104} + x^{103} + x^{102} + x^{101} + x^{96} + x^{95} + x^{94} + x^{93} + x^{88}\\
&+ x^{87} + x^{86} + x^{85} + x^{83} + x^{79} + x^{78} + x^{76} + x^{75} + x^{51} + x^{48} + x^{45}\\
&+ x^{44} + x^{43} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{31} + x^{30} + x^{28} + x^{27},\\
p_6(x) =& x^{134} + x^{130} + x^{128} + x^{124} + x^{122} + x^{120} + x^{118} + x^{116} + x^{114} + x^{106}\\
&+ x^{104} + x^{96} + x^{94} + x^{90} + x^{82} + x^{80} + x^{78} + x^{76} + x^{72} + x^{70} + x^{68}\\
&+ x^{62} + x^{56} + x^{54} + x^{52} + x^{50} + x^{48} + x^{44} + x^{42} + x^{36} + x^{34} + x^{32}\\
&+ x^{30} + x^{22} + x^{20} + x^{18},
\end{aligned}
$$

$$\begin{aligned}
p_9(x) &= x^{137} + x^{134} + x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{123} + x^{122} + x^{118} \\
&+ x^{114} + x^{113} + x^{112} + x^{110} + x^{109} + x^{107} + x^{106} + x^{102} + x^{98} + x^{97} \\
&+ x^{96} + x^{94} + x^{93} + x^{91} + x^{90} + x^{89} + x^{57} + x^{54} + x^{50} + x^{49} + x^{48} \\
&+ x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{25} + x^{22} + x^{18} + x^{17} + x^{16} + x^{14} \\
&+ x^{13} + x^{11} + x^{10} + x^{9}, \\
p_{12}(x) &= x^{140} + x^{136} + x^{132} + x^{124} + x^{116} + x^{112} + x^{108} + x^{100} + x^{96} + x^{88} \\
&+ x^{80} + x^{60} + x^{56} + x^{52} + x^{40} + x^{32} + x^{28} + x^{24} + x^{20} + x^{8} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1].

For $\phi(M^o, 1, 0)$:

$$\begin{aligned}
p_0(x) &= x^{150} + x^{148} + x^{147} + x^{143} + x^{142} + x^{139} + x^{136} + x^{135} + x^{132} + x^{131} \\
&+ x^{130} + x^{128} + x^{127} + x^{124} + x^{122} + x^{121} + x^{120} + x^{113} + x^{112} \\
&+ x^{109} + x^{106} + x^{105} + x^{104} + x^{101} + x^{100} + x^{98} + x^{97} + x^{95} + x^{92} \\
&+ x^{91} + x^{90} + x^{89} + x^{88} + x^{83} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{74} \\
&+ x^{73} + x^{72} + x^{69} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{59} + x^{58} + x^{56} \\
&+ x^{54} + x^{53} + x^{50} + x^{49} + x^{48} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39}, \\
p_3(x) &= x^{147} + x^{144} + x^{143} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{133} + x^{130} \\
&+ x^{128} + x^{127} + x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{116} + x^{114} \\
&+ x^{113} + x^{112} + x^{109} + x^{106} + x^{105} + x^{104} + x^{103} + x^{102} + x^{101} \\
&+ x^{100} + x^{98} + x^{97} + x^{94} + x^{92} + x^{91} + x^{90} + x^{87} + x^{85} + x^{84} + x^{79} \\
&+ x^{78} + x^{76} + x^{75} + x^{67} + x^{64} + x^{63} + x^{61} + x^{57} + x^{56} + x^{54} + x^{50} \\
&+ x^{49} + x^{47} + x^{42} + x^{39} + x^{37} + x^{36} + x^{31} + x^{30} + x^{28} + x^{27}, \\
p_6(x) &= x^{150} + x^{144} + x^{136} + x^{134} + x^{132} + x^{128} + x^{122} + x^{110} + x^{108} + x^{106} \\
&+ x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} + x^{68} + x^{64} + x^{62} \\
&+ x^{60} + x^{56} + x^{52} + x^{50} + x^{48} + x^{44} + x^{42} + x^{40} + x^{34} + x^{30} + x^{28} \\
&+ x^{26} + x^{22} + x^{20} + x^{18}, \\
p_9(x) &= x^{153} + x^{150} + x^{149} + x^{144} + x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} \\
&+ x^{135} + x^{133} + x^{131} + x^{125} + x^{124} + x^{120} + x^{119} + x^{117} + x^{115} \\
&+ x^{109} + x^{108} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{94} + x^{93} \\
&+ x^{91} + x^{90} + x^{89} + x^{73} + x^{70} + x^{69} + x^{64} + x^{62} + x^{60} + x^{59} + x^{58} \\
&+ x^{56} + x^{55} + x^{54} + x^{51} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{38} + x^{37} \\
&+ x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{19} + x^{16} + x^{14} \\
&+ x^{13} + x^{11} + x^{10} + x^{9}, \\
p_{12}(x) &= x^{156} + x^{148} + x^{140} + x^{132} + x^{116} + x^{112} + x^{108} + x^{96} + x^{92} + x^{80} \\
&+ x^{76} + x^{68} + x^{36} + x^{32} + x^{12} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1].

For $\phi(M^o, 1, 1)$:

$$\begin{aligned}
p_0(x) = {} & x^{147} + x^{145} + x^{143} + x^{137} + x^{135} + x^{132} + x^{131} + x^{130} + x^{129} + x^{128} \\
& + x^{127} + x^{125} + x^{123} + x^{121} + x^{119} + x^{115} + x^{111} + x^{107} + x^{102} \\
& + x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{94} + x^{92} + x^{89} + x^{85} + x^{82} \\
& + x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{73} + x^{72} + x^{71} + x^{69} + x^{67} \\
& + x^{65} + x^{62} + x^{61} + x^{60} + x^{58} + x^{54} + x^{53} + x^{49} + x^{47} + x^{45} + x^{44} \\
& + x^{42}, \\
p_3(x) = {} & x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{131} \\
& + x^{130} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{116} + x^{112} \\
& + x^{109} + x^{108} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{90} + x^{88} + x^{81} \\
& + x^{78} + x^{77} + x^{74} + x^{72} + x^{71} + x^{70} + x^{67} + x^{65} + x^{60} + x^{58} + x^{57} \\
& + x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{40} \\
& + x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{26}, \\
p_6(x) = {} & x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{131} \\
& + x^{130} + x^{129} + x^{128} + x^{126} + x^{124} + x^{120} + x^{119} + x^{117} + x^{116} \\
& + x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{106} + x^{104} + x^{103} + x^{102} \\
& + x^{100} + x^{96} + x^{94} + x^{90} + x^{88} + x^{87} + x^{82} + x^{81} + x^{80} + x^{79} + x^{78} \\
& + x^{76} + x^{71} + x^{70} + x^{69} + x^{67} + x^{65} + x^{63} + x^{60} + x^{58} + x^{57} + x^{55} \\
& + x^{52} + x^{47} + x^{45} + x^{44} + x^{43} + x^{37} + x^{36} + x^{35} + x^{30} + x^{27} + x^{26} \\
& + x^{24} + x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} + x^{11} + x^{10} + x^{8} \\
& + x^{4} + x^{3} + x^{2} + 1, \\
p_9(x) = {} & x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{131} + x^{130} + x^{128} \\
& + x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108} \\
& + x^{107} + x^{106} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{92} + x^{64} \\
& + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{44} \\
& + x^{32} + x^{31} + x^{30} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} \\
& + x^{12}, \\
p_{12}(x) = {} & x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{132} + x^{128} + x^{127} \\
& + x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{111} + x^{110} \\
& + x^{108} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91} + x^{90} \\
& + x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} \\
& + x^{54} + x^{52} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} \\
& + x^{27} + x^{26} + x^{23} + x^{22} + x^{20} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} \\
& + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0, 0].

For $\phi(W^o, 0, 0)$:

$$\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{144} + x^{140} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{127} \\
&\quad + x^{126} + x^{125} + x^{124} + x^{123} + x^{121} + x^{119} + x^{118} + x^{115} + x^{113} \\
&\quad + x^{107} + x^{106} + x^{105} + x^{104} + x^{103} + x^{100} + x^{98} + x^{97} + x^{96} + x^{92} \\
&\quad + x^{91} + x^{87} + x^{86} + x^{85} + x^{84} + x^{83} + x^{81} + x^{80} + x^{79} + x^{77} + x^{76} \\
&\quad + x^{75} + x^{74} + x^{73} + x^{71} + x^{70} + x^{69} + x^{66} + x^{65} + x^{64} + x^{62} + x^{61} \\
&\quad + x^{59} + x^{58} + x^{57} + x^{56} + x^{54} + x^{53} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} \\
&\quad + x^{45} + x^{43} + x^{41} + x^{39} + x^{36}, \\
p_3(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} \\
&\quad + x^{131} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{118} + x^{117} \\
&\quad + x^{116} + x^{115} + x^{114} + x^{113} + x^{112} + x^{106} + x^{100} + x^{97} + x^{96} + x^{94} \\
&\quad + x^{93} + x^{91} + x^{89} + x^{88} + x^{86} + x^{84} + x^{83} + x^{77} + x^{76} + x^{75} + x^{71} \\
&\quad + x^{70} + x^{67} + x^{65} + x^{60} + x^{56} + x^{51} + x^{50} + x^{48} + x^{47} + x^{46} + x^{44} \\
&\quad + x^{43} + x^{42} + x^{41} + x^{39} + x^{38} + x^{37} + x^{34} + x^{33} + x^{32} + x^{31} + x^{29} \\
&\quad + x^{27} + x^{24}, \\
p_6(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{136} + x^{135} + x^{134} + x^{133} + x^{132} \\
&\quad + x^{131} + x^{129} + x^{128} + x^{125} + x^{121} + x^{119} + x^{116} + x^{115} + x^{114} \\
&\quad + x^{113} + x^{111} + x^{109} + x^{108} + x^{100} + x^{99} + x^{97} + x^{96} + x^{94} + x^{93} \\
&\quad + x^{92} + x^{88} + x^{87} + x^{86} + x^{85} + x^{83} + x^{78} + x^{74} + x^{73} + x^{70} + x^{69} \\
&\quad + x^{68} + x^{67} + x^{66} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{53} + x^{52} \\
&\quad + x^{51} + x^{39} + x^{34} + x^{33} + x^{32} + x^{31} + x^{30} + x^{28} + x^{27} + x^{25} + x^{22} \\
&\quad + x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{14} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} \\
&\quad + x^{2} + 1, \\
p_9(x) &= x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{131} + x^{130} + x^{128} \\
&\quad + x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108} \\
&\quad + x^{107} + x^{106} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{92} + x^{64} \\
&\quad + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{44} \\
&\quad + x^{32} + x^{31} + x^{30} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} \\
&\quad + x^{12}, \\
p_{12}(x) &= x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{132} + x^{128} + x^{127} \\
&\quad + x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{111} + x^{110} \\
&\quad + x^{108} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91} + x^{90} \\
&\quad + x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} \\
&\quad + x^{54} + x^{52} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} \\
&\quad + x^{27} + x^{26} + x^{23} + x^{22} + x^{20} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2}
\end{aligned}$$

$$+ 1,$$

and the initial terms are [1, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 0].

For $\phi(W^o, 0, 1)$:

$$\begin{aligned}
p_0(x) = {} & x^{150} + x^{148} + x^{147} + x^{143} + x^{142} + x^{139} + x^{136} + x^{135} + x^{132} + x^{131} \\
& + x^{130} + x^{128} + x^{127} + x^{124} + x^{122} + x^{121} + x^{120} + x^{113} + x^{112} \\
& + x^{109} + x^{106} + x^{105} + x^{104} + x^{101} + x^{100} + x^{98} + x^{97} + x^{95} + x^{92} \\
& + x^{91} + x^{90} + x^{89} + x^{88} + x^{83} + x^{82} + x^{81} + x^{79} + x^{78} + x^{77} + x^{74} \\
& + x^{73} + x^{72} + x^{69} + x^{68} + x^{66} + x^{65} + x^{64} + x^{62} + x^{59} + x^{58} + x^{56} \\
& + x^{54} + x^{53} + x^{50} + x^{49} + x^{48} + x^{44} + x^{43} + x^{41} + x^{40} + x^{39}, \\
p_3(x) = {} & x^{147} + x^{144} + x^{143} + x^{141} + x^{139} + x^{137} + x^{135} + x^{134} + x^{133} + x^{130} \\
& + x^{128} + x^{127} + x^{126} + x^{123} + x^{121} + x^{120} + x^{119} + x^{116} + x^{114} \\
& + x^{113} + x^{112} + x^{109} + x^{106} + x^{105} + x^{104} + x^{103} + x^{102} + x^{101} \\
& + x^{100} + x^{98} + x^{97} + x^{94} + x^{92} + x^{91} + x^{90} + x^{87} + x^{85} + x^{84} + x^{79} \\
& + x^{78} + x^{76} + x^{75} + x^{67} + x^{64} + x^{63} + x^{61} + x^{57} + x^{56} + x^{54} + x^{50} \\
& + x^{49} + x^{47} + x^{42} + x^{39} + x^{37} + x^{36} + x^{31} + x^{30} + x^{28} + x^{27}, \\
p_6(x) = {} & x^{150} + x^{144} + x^{136} + x^{134} + x^{132} + x^{128} + x^{122} + x^{110} + x^{108} + x^{106} \\
& + x^{94} + x^{90} + x^{88} + x^{84} + x^{80} + x^{78} + x^{74} + x^{70} + x^{68} + x^{64} + x^{62} \\
& + x^{60} + x^{56} + x^{52} + x^{50} + x^{48} + x^{44} + x^{42} + x^{40} + x^{34} + x^{30} + x^{28} \\
& + x^{26} + x^{22} + x^{20} + x^{18}, \\
p_9(x) = {} & x^{153} + x^{150} + x^{149} + x^{144} + x^{142} + x^{140} + x^{139} + x^{138} + x^{137} + x^{136} \\
& + x^{135} + x^{133} + x^{131} + x^{125} + x^{124} + x^{120} + x^{119} + x^{117} + x^{115} \\
& + x^{109} + x^{108} + x^{105} + x^{104} + x^{103} + x^{102} + x^{99} + x^{96} + x^{94} + x^{93} \\
& + x^{91} + x^{90} + x^{89} + x^{73} + x^{70} + x^{69} + x^{64} + x^{62} + x^{60} + x^{59} + x^{58} \\
& + x^{56} + x^{55} + x^{54} + x^{51} + x^{48} + x^{46} + x^{45} + x^{43} + x^{42} + x^{38} + x^{37} \\
& + x^{32} + x^{30} + x^{28} + x^{27} + x^{26} + x^{24} + x^{23} + x^{22} + x^{19} + x^{16} + x^{14} \\
& + x^{13} + x^{11} + x^{10} + x^{9}, \\
p_{12}(x) = {} & x^{156} + x^{148} + x^{140} + x^{132} + x^{116} + x^{112} + x^{108} + x^{96} + x^{92} + x^{80} \\
& + x^{76} + x^{68} + x^{36} + x^{32} + x^{12} + 1,
\end{aligned}$$

and the initial terms are [0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1].

For $\phi(W^o, 1, 0)$:

$$\begin{aligned}
p_0(x) = {} & x^{152} + x^{148} + x^{143} + x^{142} + x^{139} + x^{138} + x^{137} + x^{131} + x^{130} + x^{129} \\
& + x^{128} + x^{126} + x^{124} + x^{120} + x^{119} + x^{115} + x^{113} + x^{112} + x^{111} \\
& + x^{110} + x^{109} + x^{106} + x^{105} + x^{104} + x^{101} + x^{99} + x^{97} + x^{96} + x^{95} \\
& + x^{94} + x^{91} + x^{90} + x^{89} + x^{88} + x^{86} + x^{85} + x^{84} + x^{82} + x^{80} + x^{79} \\
& + x^{77} + x^{75} + x^{73} + x^{71} + x^{70} + x^{69} + x^{68} + x^{67} + x^{62} + x^{60} + x^{57}
\end{aligned}$$

$$
\begin{aligned}
&+ x^{55} + x^{54} + x^{50} + x^{49} + x^{47} + x^{43} + x^{41} + x^{40} + x^{39},\\
p_3(x) &= x^{131} + x^{128} + x^{125} + x^{124} + x^{119} + x^{118} + x^{116} + x^{112} + x^{109} + x^{108}\\
&+ x^{107} + x^{104} + x^{103} + x^{102} + x^{101} + x^{96} + x^{95} + x^{94} + x^{93} + x^{88}\\
&+ x^{87} + x^{86} + x^{85} + x^{83} + x^{79} + x^{78} + x^{76} + x^{75} + x^{51} + x^{48} + x^{45}\\
&+ x^{44} + x^{43} + x^{40} + x^{39} + x^{38} + x^{37} + x^{35} + x^{31} + x^{30} + x^{28} + x^{27},\\
p_6(x) &= x^{134} + x^{130} + x^{128} + x^{124} + x^{122} + x^{120} + x^{118} + x^{116} + x^{114} + x^{106}\\
&+ x^{104} + x^{96} + x^{94} + x^{90} + x^{82} + x^{80} + x^{78} + x^{76} + x^{72} + x^{70} + x^{68}\\
&+ x^{62} + x^{56} + x^{54} + x^{52} + x^{50} + x^{48} + x^{44} + x^{42} + x^{36} + x^{34} + x^{32}\\
&+ x^{30} + x^{22} + x^{20} + x^{18},\\
p_9(x) &= x^{137} + x^{134} + x^{130} + x^{129} + x^{128} + x^{126} + x^{125} + x^{123} + x^{122} + x^{118}\\
&+ x^{114} + x^{113} + x^{112} + x^{110} + x^{109} + x^{107} + x^{106} + x^{102} + x^{98} + x^{97}\\
&+ x^{96} + x^{94} + x^{93} + x^{91} + x^{90} + x^{89} + x^{57} + x^{54} + x^{50} + x^{49} + x^{48}\\
&+ x^{46} + x^{45} + x^{43} + x^{42} + x^{41} + x^{25} + x^{22} + x^{18} + x^{17} + x^{16} + x^{14}\\
&+ x^{13} + x^{11} + x^{10} + x^{9},\\
p_{12}(x) &= x^{140} + x^{136} + x^{132} + x^{124} + x^{116} + x^{112} + x^{108} + x^{100} + x^{96} + x^{88}\\
&+ x^{80} + x^{60} + x^{56} + x^{52} + x^{40} + x^{32} + x^{28} + x^{24} + x^{20} + x^{8} + 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1].

For $\phi(W^o, 1, 1)$:

$$
\begin{aligned}
p_0(x) &= x^{147} + x^{145} + x^{143} + x^{137} + x^{135} + x^{132} + x^{131} + x^{130} + x^{129} + x^{128}\\
&+ x^{127} + x^{125} + x^{123} + x^{121} + x^{119} + x^{115} + x^{111} + x^{107} + x^{102}\\
&+ x^{101} + x^{100} + x^{99} + x^{98} + x^{97} + x^{96} + x^{94} + x^{92} + x^{89} + x^{85} + x^{82}\\
&+ x^{80} + x^{79} + x^{78} + x^{77} + x^{76} + x^{75} + x^{73} + x^{72} + x^{71} + x^{69} + x^{67}\\
&+ x^{65} + x^{62} + x^{61} + x^{60} + x^{58} + x^{54} + x^{53} + x^{49} + x^{47} + x^{45} + x^{44}\\
&+ x^{42},\\
p_3(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{131}\\
&+ x^{130} + x^{128} + x^{126} + x^{125} + x^{124} + x^{120} + x^{119} + x^{116} + x^{112}\\
&+ x^{109} + x^{108} + x^{102} + x^{101} + x^{100} + x^{99} + x^{97} + x^{90} + x^{88} + x^{81}\\
&+ x^{78} + x^{77} + x^{74} + x^{72} + x^{71} + x^{70} + x^{67} + x^{65} + x^{60} + x^{58} + x^{57}\\
&+ x^{53} + x^{52} + x^{51} + x^{50} + x^{49} + x^{47} + x^{46} + x^{45} + x^{43} + x^{42} + x^{40}\\
&+ x^{39} + x^{37} + x^{36} + x^{35} + x^{34} + x^{32} + x^{31} + x^{30} + x^{29} + x^{28} + x^{26},\\
p_6(x) &= x^{144} + x^{143} + x^{142} + x^{141} + x^{139} + x^{138} + x^{137} + x^{135} + x^{134} + x^{131}\\
&+ x^{130} + x^{129} + x^{128} + x^{126} + x^{124} + x^{120} + x^{119} + x^{117} + x^{116}\\
&+ x^{114} + x^{113} + x^{112} + x^{111} + x^{110} + x^{106} + x^{104} + x^{103} + x^{102}\\
&+ x^{100} + x^{96} + x^{94} + x^{90} + x^{88} + x^{87} + x^{82} + x^{81} + x^{80} + x^{79} + x^{78}\\
&+ x^{76} + x^{71} + x^{70} + x^{69} + x^{67} + x^{65} + x^{63} + x^{60} + x^{58} + x^{57} + x^{55}
\end{aligned}
$$

$$
\begin{aligned}
&+ x^{52} + x^{47} + x^{45} + x^{44} + x^{43} + x^{37} + x^{36} + x^{35} + x^{30} + x^{27} + x^{26} \\
&+ x^{24} + x^{22} + x^{21} + x^{20} + x^{18} + x^{17} + x^{16} + x^{15} + x^{11} + x^{10} + x^{8} \\
&+ x^{4} + x^{3} + x^{2} + 1, \\
p_9(x) = {}& x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{131} + x^{130} + x^{128} \\
&+ x^{124} + x^{123} + x^{122} + x^{119} + x^{118} + x^{115} + x^{114} + x^{112} + x^{108} \\
&+ x^{107} + x^{106} + x^{103} + x^{102} + x^{99} + x^{98} + x^{95} + x^{94} + x^{92} + x^{64} \\
&+ x^{63} + x^{62} + x^{59} + x^{58} + x^{55} + x^{54} + x^{51} + x^{50} + x^{47} + x^{46} + x^{44} \\
&+ x^{32} + x^{31} + x^{30} + x^{27} + x^{26} + x^{23} + x^{22} + x^{19} + x^{18} + x^{15} + x^{14} \\
&+ x^{12}, \\
p_{12}(x) = {}& x^{144} + x^{143} + x^{142} + x^{139} + x^{138} + x^{135} + x^{134} + x^{132} + x^{128} + x^{127} \\
&+ x^{126} + x^{124} + x^{120} + x^{119} + x^{118} + x^{115} + x^{114} + x^{111} + x^{110} \\
&+ x^{108} + x^{104} + x^{103} + x^{102} + x^{99} + x^{98} + x^{96} + x^{92} + x^{91} + x^{90} \\
&+ x^{88} + x^{84} + x^{83} + x^{82} + x^{80} + x^{64} + x^{63} + x^{62} + x^{59} + x^{58} + x^{55} \\
&+ x^{54} + x^{52} + x^{44} + x^{43} + x^{42} + x^{40} + x^{36} + x^{35} + x^{34} + x^{31} + x^{30} \\
&+ x^{27} + x^{26} + x^{23} + x^{22} + x^{20} + x^{12} + x^{11} + x^{10} + x^{8} + x^{4} + x^{3} + x^{2} \\
&+ 1,
\end{aligned}
$$

and the initial terms are [0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0, 0].

Below is the transition function and output function of an 2-automaton that generates $T = M^o_{0,0}$:

Transition function $(n, j) \mapsto \delta(n, j)$ $(\Lambda(n) := [\delta(n, 0), \delta(n, 1)])$:

n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$	n	$\Lambda(n)$
0	[1, 2]	1097	[1629, 1809]	2194	[1366, 3136]	3291	[3815, 2451]
1	[3, 4]	1098	[1661, 823]	2195	[3137, 2394]	3292	[3816, 2627]
2	[5, 6]	1099	[814, 1652]	2196	[3138, 3139]	3293	[3817, 72]
3	[7, 8]	1100	[1666, 1810]	2197	[3140, 2768]	3294	[3818, 2875]
4	[9, 10]	1101	[1811, 1812]	2198	[2526, 2668]	3295	[3819, 2330]
5	[11, 12]	1102	[1813, 1795]	2199	[3141, 3142]	3296	[3820, 3821]
6	[13, 14]	1103	[1715, 1547]	2200	[3143, 3144]	3297	[1343, 1036]
7	[15, 16]	1104	[1814, 809]	2201	[893, 895]	3298	[1493, 3822]
8	[17, 18]	1105	[1815, 1669]	2202	[3145, 435]	3299	[335, 2731]
9	[19, 20]	1106	[1816, 1817]	2203	[3146, 3147]	3300	[3823, 3824]
10	[21, 22]	1107	[1818, 1819]	2204	[2895, 3148]	3301	[3825, 3826]
11	[23, 24]	1108	[1820, 1821]	2205	[3149, 3150]	3302	[2833, 3827]
12	[25, 26]	1109	[722, 1822]	2206	[3151, 2657]	3303	[3828, 2633]
13	[27, 28]	1110	[1823, 1824]	2207	[3152, 3153]	3304	[3829, 867]
14	[29, 30]	1111	[1825, 1826]	2208	[3154, 3155]	3305	[3830, 2877]
15	[31, 32]	1112	[1827, 1577]	2209	[124, 21]	3306	[3120, 2468]
16	[33, 34]	1113	[1828, 1829]	2210	[3156, 613]	3307	[3831, 3832]
17	[35, 36]	1114	[1773, 136]	2211	[831, 1519]	3308	[3833, 3834]
18	[37, 38]	1115	[1830, 1831]	2212	[3157, 3158]	3309	[3835, 2503]

19	[39, 40]	1116	[609, 1832]	2213	[3159, 484]	3310	[3773, 2575]
20	[41, 42]	1117	[1833, 603]	2214	[650, 755]	3311	[3836, 3837]
21	[43, 44]	1118	[754, 1834]	2215	[3160, 3161]	3312	[1451, 2593]
22	[45, 46]	1119	[1835, 1836]	2216	[2145, 3162]	3313	[3838, 2693]
23	[47, 48]	1120	[1837, 1838]	2217	[2149, 1582]	3314	[3839, 3840]
24	[49, 50]	1121	[1839, 1840]	2218	[223, 3163]	3315	[3841, 3842]
25	[51, 52]	1122	[1841, 711]	2219	[3164, 3165]	3316	[2398, 2770]
26	[53, 54]	1123	[503, 1842]	2220	[3166, 3167]	3317	[3843, 3844]
27	[55, 56]	1124	[1843, 1844]	2221	[3168, 1799]	3318	[1309, 3845]
28	[57, 58]	1125	[535, 1532]	2222	[3169, 3170]	3319	[2674, 3846]
29	[59, 60]	1126	[1845, 1650]	2223	[1905, 1901]	3320	[1223, 1379]
30	[61, 62]	1127	[1664, 1670]	2224	[3171, 1520]	3321	[1089, 2499]
31	[63, 64]	1128	[237, 1846]	2225	[3172, 581]	3322	[3847, 3840]
32	[65, 66]	1129	[1647, 760]	2226	[2113, 3173]	3323	[887, 2628]
33	[67, 68]	1130	[1847, 236]	2227	[3174, 242]	3324	[3848, 3849]
34	[69, 70]	1131	[51, 1848]	2228	[3175, 1754]	3325	[3850, 2701]
35	[71, 72]	1132	[1849, 738]	2229	[3176, 232]	3326	[3851, 1051]
36	[73, 74]	1133	[1771, 648]	2230	[3177, 1968]	3327	[2446, 998]
37	[75, 76]	1134	[1850, 145]	2231	[1559, 2016]	3328	[1289, 2334]
38	[77, 78]	1135	[1851, 1852]	2232	[3178, 1992]	3329	[3852, 1038]
39	[79, 80]	1136	[1853, 517]	2233	[1551, 3179]	3330	[3853, 2671]
40	[81, 82]	1137	[1854, 1855]	2234	[3180, 3181]	3331	[3854, 3855]
41	[83, 84]	1138	[1856, 774]	2235	[1865, 840]	3332	[3856, 2541]
42	[85, 86]	1139	[853, 1819]	2236	[3182, 1995]	3333	[3857, 2211]
43	[87, 88]	1140	[1857, 496]	2237	[3183, 235]	3334	[3858, 3859]
44	[89, 90]	1141	[1858, 60]	2238	[3184, 1833]	3335	[3860, 468]
45	[91, 92]	1142	[1859, 481]	2239	[1732, 3185]	3336	[3861, 3862]
46	[93, 94]	1143	[1860, 1861]	2240	[1743, 715]	3337	[3863, 3864]
47	[95, 96]	1144	[1514, 32]	2241	[1551, 706]	3338	[3144, 2508]
48	[97, 98]	1145	[477, 130]	2242	[3180, 2006]	3339	[3865, 3866]
49	[99, 100]	1146	[1554, 1862]	2243	[3186, 802]	3340	[2731, 3045]
50	[101, 102]	1147	[1863, 1830]	2244	[3187, 744]	3341	[3867, 3716]
51	[103, 104]	1148	[1864, 1829]	2245	[3188, 820]	3342	[2973, 3868]
52	[105, 106]	1149	[1865, 1866]	2246	[1641, 583]	3343	[3869, 3144]
53	[107, 108]	1150	[1619, 795]	2247	[3189, 3190]	3344	[3870, 3871]
54	[109, 110]	1151	[1867, 1706]	2248	[3191, 706]	3345	[3872, 2419]
55	[111, 112]	1152	[1868, 1518]	2249	[778, 3192]	3346	[2746, 2716]
56	[113, 114]	1153	[1589, 1573]	2250	[3193, 2042]	3347	[3040, 3873]
57	[115, 116]	1154	[549, 1869]	2251	[3194, 3195]	3348	[964, 1055]
58	[117, 118]	1155	[1870, 1871]	2252	[3196, 1968]	3349	[3874, 1502]
59	[119, 120]	1156	[1872, 1873]	2253	[245, 1873]	3350	[3875, 420]
60	[121, 122]	1157	[1874, 481]	2254	[3197, 3198]	3351	[3810, 961]
61	[123, 124]	1158	[1875, 1876]	2255	[3178, 3199]	3352	[3876, 2560]
62	[125, 126]	1159	[1877, 1878]	2256	[219, 3200]	3353	[3877, 2543]

63	[127, 128]	1160	[1879, 1880]	2257	[1634, 3201]	3354	[3878, 3879]
64	[129, 130]	1161	[1881, 1882]	2258	[3202, 1965]	3355	[2961, 3880]
65	[131, 132]	1162	[780, 47]	2259	[3203, 45]	3356	[3881, 2400]
66	[133, 134]	1163	[1557, 1883]	2260	[1922, 698]	3357	[440, 1098]
67	[135, 136]	1164	[1884, 761]	2261	[3204, 1709]	3358	[1216, 3882]
68	[137, 138]	1165	[1617, 1885]	2262	[1646, 1792]	3359	[2471, 109]
69	[139, 50]	1166	[588, 1886]	2263	[2039, 3205]	3360	[2332, 301]
70	[140, 141]	1167	[1887, 722]	2264	[3206, 696]	3361	[3883, 3884]
71	[142, 143]	1168	[1888, 505]	2265	[3207, 3208]	3362	[315, 3885]
72	[144, 145]	1169	[1889, 1786]	2266	[3209, 589]	3363	[3886, 1489]
73	[146, 147]	1170	[1890, 1891]	2267	[3210, 2199]	3364	[3887, 3888]
74	[148, 149]	1171	[1892, 1700]	2268	[564, 3211]	3365	[3889, 3890]
75	[150, 151]	1172	[1893, 1542]	2269	[3212, 219]	3366	[66, 3891]
76	[152, 153]	1173	[1894, 1895]	2270	[1552, 3213]	3367	[2543, 319]
77	[154, 155]	1174	[1896, 1897]	2271	[1549, 3214]	3368	[2817, 986]
78	[156, 157]	1175	[686, 615]	2272	[3215, 2168]	3369	[1447, 3892]
79	[158, 159]	1176	[709, 1748]	2273	[157, 1776]	3370	[3893, 2824]
80	[160, 161]	1177	[1748, 1595]	2274	[3216, 3217]	3371	[3894, 1379]
81	[162, 163]	1178	[1898, 1698]	2275	[2098, 490]	3372	[3895, 330]
82	[164, 165]	1179	[560, 1899]	2276	[3218, 3219]	3373	[1143, 2388]
83	[166, 167]	1180	[189, 1900]	2277	[3220, 516]	3374	[3896, 3897]
84	[168, 169]	1181	[1901, 1902]	2278	[3221, 2135]	3375	[3898, 352]
85	[170, 171]	1182	[1903, 1904]	2279	[3222, 3223]	3376	[3107, 1493]
86	[172, 173]	1183	[1905, 1906]	2280	[3224, 800]	3377	[3899, 2385]
87	[174, 175]	1184	[1907, 1817]	2281	[3225, 1860]	3378	[2615, 3900]
88	[176, 177]	1185	[48, 1810]	2282	[3226, 828]	3379	[1000, 3725]
89	[178, 179]	1186	[1908, 1801]	2283	[1857, 1943]	3380	[3901, 3902]
90	[180, 181]	1187	[1909, 1663]	2284	[850, 3227]	3381	[3903, 3748]
91	[182, 183]	1188	[244, 1872]	2285	[170, 1967]	3382	[3904, 19]
92	[184, 185]	1189	[1910, 797]	2286	[8, 3228]	3383	[3905, 2824]
93	[186, 187]	1190	[1911, 1597]	2287	[479, 3229]	3384	[3906, 3907]
94	[188, 189]	1191	[1912, 1913]	2288	[41, 1658]	3385	[3908, 3909]
95	[190, 191]	1192	[1541, 1914]	2289	[3230, 1707]	3386	[3910, 3046]
96	[192, 193]	1193	[1915, 1916]	2290	[1633, 1528]	3387	[3022, 2608]
97	[194, 195]	1194	[1917, 1578]	2291	[1811, 1712]	3388	[2929, 3911]
98	[196, 197]	1195	[1918, 128]	2292	[514, 2179]	3389	[3912, 1272]
99	[158, 198]	1196	[1919, 1920]	2293	[3231, 1763]	3390	[3913, 2574]
100	[199, 2]	1197	[1921, 1862]	2294	[3232, 569]	3391	[3914, 3915]
101	[200, 201]	1198	[1922, 783]	2295	[848, 3233]	3392	[3916, 3917]
102	[202, 203]	1199	[1556, 1616]	2296	[824, 3234]	3393	[3918, 3919]
103	[204, 205]	1200	[1923, 1924]	2297	[2187, 3235]	3394	[3697, 3920]
104	[206, 207]	1201	[1807, 1925]	2298	[1964, 191]	3395	[2802, 2417]
105	[208, 209]	1202	[1926, 1835]	2299	[3236, 694]	3396	[2502, 1343]
106	[210, 177]	1203	[1927, 1900]	2300	[1955, 3237]	3397	[3921, 3922]

107	[211, 212]	1204	[1616, 1883]	2301	[3238, 1767]	3398	[3661, 3923]
108	[213, 214]	1205	[648, 133]	2302	[3239, 3240]	3399	[3924, 3925]
109	[215, 216]	1206	[1928, 1929]	2303	[3241, 172]	3400	[3926, 2936]
110	[217, 218]	1207	[808, 1930]	2304	[3242, 1748]	3401	[253, 2723]
111	[219, 220]	1208	[530, 834]	2305	[3243, 1742]	3402	[3927, 3928]
112	[221, 222]	1209	[1931, 1932]	2306	[508, 2045]	3403	[3929, 3930]
113	[223, 224]	1210	[1829, 1933]	2307	[1748, 1702]	3404	[20, 3931]
114	[195, 225]	1211	[1934, 1935]	2308	[1677, 3244]	3405	[3932, 3933]
115	[226, 227]	1212	[1936, 625]	2309	[3245, 3246]	3406	[3934, 3935]
116	[228, 229]	1213	[563, 1937]	2310	[1722, 3247]	3407	[2601, 3936]
117	[230, 231]	1214	[849, 1938]	2311	[3248, 2117]	3408	[3937, 3772]
118	[148, 232]	1215	[1939, 1677]	2312	[3249, 707]	3409	[1271, 2352]
119	[233, 234]	1216	[1534, 1940]	2313	[128, 3250]	3410	[3938, 3939]
120	[235, 236]	1217	[1941, 1942]	2314	[2096, 3251]	3411	[3940, 3941]
121	[237, 238]	1218	[495, 1943]	2315	[3252, 3253]	3412	[3942, 3926]
122	[239, 240]	1219	[1892, 1625]	2316	[135, 1575]	3413	[2771, 3943]
123	[241, 242]	1220	[476, 711]	2317	[3254, 3207]	3414	[2256, 390]
124	[243, 45]	1221	[1944, 167]	2318	[1818, 569]	3415	[3944, 3945]
125	[244, 245]	1222	[1945, 1565]	2319	[2089, 3255]	3416	[3083, 3946]
126	[246, 247]	1223	[1946, 1947]	2320	[1688, 658]	3417	[3947, 3948]
127	[248, 249]	1224	[1948, 1659]	2321	[3256, 505]	3418	[3949, 3715]
128	[250, 251]	1225	[552, 1949]	2322	[712, 1688]	3419	[1016, 3950]
129	[252, 253]	1226	[1755, 1950]	2323	[2188, 3257]	3420	[3951, 2534]
130	[254, 255]	1227	[1755, 1951]	2324	[1915, 2177]	3421	[2564, 1128]
131	[256, 257]	1228	[1952, 1953]	2325	[3169, 3258]	3422	[3952, 2904]
132	[258, 259]	1229	[150, 1954]	2326	[3259, 3260]	3423	[3953, 3954]
133	[260, 261]	1230	[55, 769]	2327	[3261, 555]	3424	[3955, 3956]
134	[262, 263]	1231	[1955, 1956]	2328	[3254, 1640]	3425	[1027, 1127]
135	[264, 265]	1232	[1957, 1655]	2329	[1666, 3262]	3426	[272, 1228]
136	[266, 267]	1233	[1958, 1959]	2330	[731, 480]	3427	[2423, 3049]
137	[268, 249]	1234	[1960, 45]	2331	[803, 3158]	3428	[3957, 3958]
138	[269, 270]	1235	[1961, 1817]	2332	[1593, 1660]	3429	[1133, 3959]
139	[271, 272]	1236	[1962, 188]	2333	[1867, 577]	3430	[3960, 3961]
140	[273, 274]	1237	[1733, 1662]	2334	[710, 558]	3431	[3962, 2335]
141	[275, 276]	1238	[1963, 727]	2335	[1592, 2187]	3432	[3963, 3964]
142	[277, 83]	1239	[1790, 523]	2336	[1945, 704]	3433	[3965, 1376]
143	[278, 279]	1240	[1546, 1716]	2337	[833, 531]	3434	[3966, 2551]
144	[280, 281]	1241	[1964, 592]	2338	[714, 1886]	3435	[1330, 976]
145	[282, 283]	1242	[1965, 1942]	2339	[3263, 2129]	3436	[3967, 3055]
146	[284, 285]	1243	[1939, 852]	2340	[3264, 3265]	3437	[2698, 3968]
147	[100, 286]	1244	[1966, 1967]	2341	[491, 2198]	3438	[3969, 3083]
148	[287, 288]	1245	[675, 1968]	2342	[2176, 1916]	3439	[3970, 3971]
149	[289, 290]	1246	[1969, 662]	2343	[2029, 1692]	3440	[3972, 2399]
150	[291, 292]	1247	[499, 535]	2344	[1746, 1755]	3441	[3973, 3974]

151	[292, 293]	1248	[826, 1970]	2345	[3266, 2077]	3442	[3747, 3975]
152	[294, 295]	1249	[1971, 1972]	2346	[3267, 3265]	3443	[3976, 3977]
153	[296, 297]	1250	[178, 1973]	2347	[3268, 729]	3444	[2670, 3978]
154	[298, 299]	1251	[1974, 1975]	2348	[1855, 3269]	3445	[3979, 3980]
155	[300, 301]	1252	[1976, 687]	2349	[2190, 1869]	3446	[3981, 3982]
156	[302, 303]	1253	[1977, 1978]	2350	[1969, 633]	3447	[3983, 2518]
157	[304, 305]	1254	[1979, 515]	2351	[3270, 2044]	3448	[1483, 3984]
158	[306, 307]	1255	[1832, 1980]	2352	[3271, 2147]	3449	[3985, 3986]
159	[308, 309]	1256	[1851, 1953]	2353	[3272, 1749]	3450	[3987, 1078]
160	[310, 311]	1257	[1981, 1982]	2354	[1550, 705]	3451	[3834, 1433]
161	[312, 313]	1258	[1983, 240]	2355	[3273, 3274]	3452	[1496, 1014]
162	[314, 315]	1259	[1984, 1557]	2356	[3275, 1630]	3453	[3988, 3989]
163	[316, 317]	1260	[1985, 556]	2357	[2136, 1816]	3454	[3990, 3991]
164	[318, 319]	1261	[1912, 1824]	2358	[3276, 1855]	3455	[3992, 1270]
165	[320, 321]	1262	[1986, 781]	2359	[3277, 3163]	3456	[3993, 2572]
166	[322, 323]	1263	[1987, 485]	2360	[1688, 3278]	3457	[3994, 3995]
167	[324, 325]	1264	[1758, 1988]	2361	[155, 1549]	3458	[3996, 1124]
168	[326, 327]	1265	[1989, 769]	2362	[3279, 2047]	3459	[903, 3848]
169	[328, 329]	1266	[695, 1990]	2363	[649, 754]	3460	[3997, 2528]
170	[330, 331]	1267	[1991, 1992]	2364	[3280, 3281]	3461	[3998, 3657]
171	[332, 284]	1268	[555, 1867]	2365	[247, 41]	3462	[3975, 1474]
172	[333, 24]	1269	[1954, 1954]	2366	[3282, 3283]	3463	[3999, 4000]
173	[334, 335]	1270	[832, 1867]	2367	[1766, 3284]	3464	[4001, 261]
174	[336, 104]	1271	[557, 708]	2368	[843, 2075]	3465	[2688, 4002]
175	[337, 338]	1272	[554, 1622]	2369	[2119, 633]	3466	[3842, 2598]
176	[339, 340]	1273	[653, 1705]	2370	[3285, 1938]	3467	[4003, 1248]
177	[341, 342]	1274	[552, 132]	2371	[3286, 3287]	3468	[4004, 1086]
178	[343, 344]	1275	[1993, 1836]	2372	[3288, 774]	3469	[4005, 1225]
179	[345, 346]	1276	[1515, 527]	2373	[1966, 171]	3470	[4006, 1247]
180	[347, 348]	1277	[1591, 1832]	2374	[682, 533]	3471	[4007, 1386]
181	[349, 350]	1278	[1994, 1710]	2375	[683, 3289]	3472	[2993, 1464]
182	[351, 352]	1279	[1995, 1862]	2376	[3290, 621]	3473	[4008, 1082]
183	[353, 354]	1280	[43, 1996]	2377	[3291, 1767]	3474	[4009, 4010]
184	[355, 356]	1281	[1997, 1998]	2378	[3292, 1623]	3475	[3125, 4011]
185	[357, 358]	1282	[1999, 1636]	2379	[1695, 2072]	3476	[1368, 4012]
186	[359, 360]	1283	[2000, 2001]	2380	[151, 1954]	3477	[3005, 3971]
187	[361, 362]	1284	[1995, 54]	2381	[831, 1657]	3478	[4013, 4014]
188	[363, 364]	1285	[2002, 682]	2382	[3293, 239]	3479	[930, 1488]
189	[365, 366]	1286	[700, 753]	2383	[1649, 234]	3480	[4015, 3849]
190	[367, 368]	1287	[2003, 792]	2384	[797, 790]	3481	[3939, 4016]
191	[369, 370]	1288	[1727, 1778]	2385	[3294, 1974]	3482	[4017, 4018]
192	[371, 372]	1289	[2004, 1592]	2386	[211, 1778]	3483	[4019, 3843]
193	[373, 374]	1290	[2005, 2006]	2387	[3295, 3240]	3484	[3124, 3128]
194	[375, 376]	1291	[2007, 829]	2388	[3245, 3296]	3485	[4020, 4021]

195	[377, 378]	1292	[2008, 792]	2389	[1640, 3297]	3486	[4022, 857]
196	[379, 380]	1293	[1754, 1996]	2390	[3238, 3284]	3487	[4023, 2759]
197	[381, 382]	1294	[2009, 52]	2391	[1919, 214]	3488	[3780, 4024]
198	[383, 384]	1295	[2010, 43]	2392	[2014, 1796]	3489	[4025, 2923]
199	[385, 386]	1296	[2011, 2012]	2393	[3195, 2141]	3490	[2537, 4026]
200	[387, 388]	1297	[2013, 2014]	2394	[1833, 3298]	3491	[4027, 4028]
201	[389, 390]	1298	[2015, 2016]	2395	[3299, 1834]	3492	[2837, 2292]
202	[391, 392]	1299	[2017, 2018]	2396	[3300, 3301]	3493	[4029, 2723]
203	[393, 394]	1300	[2019, 2020]	2397	[243, 2050]	3494	[4030, 321]
204	[395, 365]	1301	[2021, 541]	2398	[1575, 1663]	3495	[1313, 4031]
205	[396, 397]	1302	[1888, 1787]	2399	[1962, 205]	3496	[4032, 4033]
206	[398, 399]	1303	[2022, 827]	2400	[3157, 1740]	3497	[4034, 2909]
207	[400, 401]	1304	[2023, 500]	2401	[1952, 1852]	3498	[4035, 3869]
208	[402, 265]	1305	[2024, 1582]	2402	[2059, 3185]	3499	[1191, 272]
209	[403, 404]	1306	[2025, 575]	2403	[3302, 3222]	3500	[4036, 1393]
210	[405, 406]	1307	[2026, 2027]	2404	[3303, 198]	3501	[1151, 4037]
211	[340, 407]	1308	[799, 2028]	2405	[2167, 1874]	3502	[4038, 2420]
212	[408, 409]	1309	[164, 814]	2406	[2076, 3304]	3503	[1299, 275]
213	[410, 411]	1310	[2029, 1613]	2407	[3305, 1808]	3504	[4039, 1110]
214	[412, 413]	1311	[541, 237]	2408	[140, 1750]	3505	[4040, 3035]
215	[414, 415]	1312	[2030, 2031]	2409	[1991, 3199]	3506	[4037, 2890]
216	[416, 417]	1313	[2032, 724]	2410	[3306, 492]	3507	[3943, 2715]
217	[418, 419]	1314	[1879, 2033]	2411	[743, 1638]	3508	[4041, 4042]
218	[420, 307]	1315	[2034, 2035]	2412	[2091, 3307]	3509	[4043, 2707]
219	[421, 422]	1316	[1569, 1874]	2413	[3308, 1609]	3510	[923, 4044]
220	[423, 424]	1317	[812, 1611]	2414	[3309, 1867]	3511	[4045, 979]
221	[425, 426]	1318	[767, 543]	2415	[1986, 47]	3512	[4046, 2613]
222	[427, 428]	1319	[2036, 1817]	2416	[3310, 1640]	3513	[4047, 907]
223	[429, 430]	1320	[698, 2037]	2417	[1653, 3311]	3514	[4048, 4049]
224	[431, 432]	1321	[38, 667]	2418	[3312, 3201]	3515	[4050, 2661]
225	[433, 434]	1322	[2038, 44]	2419	[3313, 185]	3516	[4051, 4052]
226	[435, 292]	1323	[1570, 2039]	2420	[3314, 510]	3517	[4053, 2567]
227	[436, 437]	1324	[2040, 669]	2421	[2203, 181]	3518	[4054, 3678]
228	[438, 285]	1325	[2041, 2042]	2422	[2066, 1563]	3519	[4055, 1316]
229	[439, 440]	1326	[2043, 2044]	2423	[2030, 1876]	3520	[4056, 449]
230	[441, 442]	1327	[1983, 2045]	2424	[1530, 3315]	3521	[3713, 2884]
231	[443, 444]	1328	[2046, 641]	2425	[3316, 3317]	3522	[4057, 3913]
232	[445, 446]	1329	[2024, 527]	2426	[1577, 3318]	3523	[4058, 903]
233	[447, 448]	1330	[1875, 2031]	2427	[1829, 3319]	3524	[4059, 372]
234	[449, 450]	1331	[226, 2047]	2428	[3320, 1988]	3525	[4060, 1372]
235	[451, 452]	1332	[1616, 1601]	2429	[2203, 3321]	3526	[4061, 3922]
236	[453, 454]	1333	[2048, 764]	2430	[3322, 1855]	3527	[4062, 2258]
237	[455, 456]	1334	[2049, 228]	2431	[2085, 1844]	3528	[4063, 3668]
238	[457, 458]	1335	[233, 1650]	2432	[522, 628]	3529	[4064, 2767]

239	[459, 460]	1336	[2050, 697]	2433	[3257, 3323]	3530	[4065, 4066]
240	[72, 461]	1337	[2012, 134]	2434	[650, 1834]	3531	[3873, 3712]
241	[462, 463]	1338	[2051, 2052]	2435	[3230, 836]	3532	[2572, 4067]
242	[464, 465]	1339	[2053, 1579]	2436	[581, 726]	3533	[2379, 1356]
243	[466, 93]	1340	[2054, 1830]	2437	[518, 1748]	3534	[3718, 2687]
244	[467, 468]	1341	[2055, 1557]	2438	[3324, 3325]	3535	[4068, 961]
245	[469, 470]	1342	[2056, 2]	2439	[3326, 3234]	3536	[4069, 452]
246	[471, 472]	1343	[2057, 2058]	2440	[1668, 3327]	3537	[368, 2374]
247	[473, 474]	1344	[2059, 821]	2441	[208, 3201]	3538	[4070, 18]
248	[475, 476]	1345	[2060, 1612]	2442	[2151, 179]	3539	[3093, 2431]
249	[477, 478]	1346	[2061, 492]	2443	[239, 2045]	3540	[4071, 1460]
250	[479, 480]	1347	[2062, 2063]	2444	[1536, 3328]	3541	[4072, 3879]
251	[481, 482]	1348	[1627, 60]	2445	[3329, 1704]	3542	[2890, 1191]
252	[483, 484]	1349	[2064, 140]	2446	[2057, 2]	3543	[3657, 2679]
253	[485, 486]	1350	[2065, 2066]	2447	[3330, 163]	3544	[4073, 1267]
254	[487, 488]	1351	[176, 2067]	2448	[3331, 731]	3545	[4074, 2911]
255	[489, 490]	1352	[2053, 138]	2449	[3332, 14]	3546	[2569, 4075]
256	[491, 492]	1353	[2068, 137]	2450	[3333, 3334]	3547	[4076, 1088]
257	[493, 494]	1354	[2069, 738]	2451	[3335, 3336]	3548	[4077, 4078]
258	[495, 496]	1355	[2070, 1924]	2452	[3337, 3327]	3549	[4042, 4079]
259	[497, 498]	1356	[152, 2071]	2453	[2066, 3338]	3550	[2436, 3995]
260	[499, 500]	1357	[2072, 1622]	2454	[574, 3339]	3551	[4080, 4081]
261	[501, 502]	1358	[2073, 650]	2455	[218, 844]	3552	[4082, 448]
262	[503, 504]	1359	[47, 1666]	2456	[3340, 3341]	3553	[80, 3040]
263	[505, 506]	1360	[2074, 2075]	2457	[2060, 2029]	3554	[4079, 1050]
264	[507, 508]	1361	[2076, 1871]	2458	[3342, 699]	3555	[4083, 2919]
265	[509, 510]	1362	[1928, 2077]	2459	[3343, 1630]	3556	[399, 4084]
266	[182, 175]	1363	[2078, 1717]	2460	[2092, 2094]	3557	[4085, 3713]
267	[511, 512]	1364	[801, 2079]	2461	[611, 849]	3558	[4086, 463]
268	[513, 212]	1365	[2080, 2081]	2462	[2174, 632]	3559	[4087, 4088]
269	[514, 515]	1366	[2082, 522]	2463	[3344, 1647]	3560	[4089, 3868]
270	[516, 517]	1367	[2083, 10]	2464	[3345, 3306]	3561	[4090, 1151]
271	[518, 519]	1368	[2084, 1531]	2465	[2208, 776]	3562	[1266, 4091]
272	[520, 521]	1369	[573, 711]	2466	[3346, 689]	3563	[4092, 4093]
273	[9, 522]	1370	[2085, 2086]	2467	[3347, 792]	3564	[4094, 4095]
274	[172, 523]	1371	[584, 2087]	2468	[2000, 3214]	3565	[4096, 4097]
275	[524, 504]	1372	[1566, 2088]	2469	[3348, 1575]	3566	[350, 3091]
276	[525, 526]	1373	[2089, 197]	2470	[3349, 1573]	3567	[4098, 4099]
277	[32, 527]	1374	[1787, 506]	2471	[3350, 217]	3568	[1032, 111]
278	[528, 529]	1375	[2090, 632]	2472	[3197, 1776]	3569	[4100, 2375]
279	[530, 531]	1376	[846, 1812]	2473	[48, 3262]	3570	[4101, 3883]
280	[532, 533]	1377	[2091, 2092]	2474	[617, 1728]	3571	[2586, 4102]
281	[534, 535]	1378	[1675, 2093]	2475	[1923, 2135]	3572	[4103, 4104]
282	[536, 537]	1379	[1644, 1838]	2476	[3307, 581]	3573	[251, 4105]

283	[538, 539]	1380	[2094, 726]	2477	[3346, 1626]	3574	[4106, 4107]
284	[540, 541]	1381	[2095, 769]	2478	[1749, 141]	3575	[2333, 3684]
285	[542, 543]	1382	[2096, 2097]	2479	[2205, 236]	3576	[4108, 113]
286	[198, 544]	1383	[2098, 2099]	2480	[783, 699]	3577	[4109, 2220]
287	[545, 546]	1384	[2100, 1669]	2481	[681, 532]	3578	[1239, 4110]
288	[547, 548]	1385	[1756, 508]	2482	[3351, 534]	3579	[3131, 2548]
289	[549, 550]	1386	[1993, 2101]	2483	[2172, 1745]	3580	[4111, 4112]
290	[551, 552]	1387	[2102, 2103]	2484	[3352, 3353]	3581	[4113, 4114]
291	[553, 554]	1388	[505, 1788]	2485	[3354, 2117]	3582	[4115, 1278]
292	[555, 556]	1389	[2104, 196]	2486	[762, 3355]	3583	[3098, 4116]
293	[554, 557]	1390	[2105, 525]	2487	[781, 48]	3584	[4117, 4118]
294	[476, 558]	1391	[702, 2106]	2488	[3356, 624]	3585	[3086, 4047]
295	[559, 560]	1392	[2107, 1767]	2489	[683, 497]	3586	[4119, 4120]
296	[11, 529]	1393	[2108, 1793]	2490	[3357, 611]	3587	[4121, 2640]
297	[561, 562]	1394	[2109, 38]	2491	[2008, 2014]	3588	[4122, 895]
298	[563, 564]	1395	[2110, 2111]	2492	[1994, 3358]	3589	[2344, 380]
299	[565, 566]	1396	[2112, 776]	2493	[3359, 53]	3590	[4123, 4124]
300	[567, 8]	1397	[2113, 1978]	2494	[3184, 602]	3591	[4125, 1445]
301	[568, 569]	1398	[2114, 172]	2495	[3360, 3361]	3592	[4126, 3022]
302	[570, 522]	1399	[568, 1819]	2496	[3362, 1951]	3593	[4127, 4128]
303	[571, 572]	1400	[592, 1533]	2497	[3189, 1840]	3594	[4129, 4130]
304	[573, 558]	1401	[2115, 578]	2498	[3363, 728]	3595	[4131, 4132]
305	[574, 575]	1402	[2116, 2117]	2499	[1954, 151]	3596	[4133, 2212]
306	[576, 577]	1403	[2118, 1874]	2500	[580, 832]	3597	[4134, 2729]
307	[578, 578]	1404	[2119, 662]	2501	[2072, 557]	3598	[4135, 965]
308	[579, 198]	1405	[612, 1938]	2502	[728, 1705]	3599	[4136, 84]
309	[159, 580]	1406	[589, 2120]	2503	[709, 519]	3600	[4137, 1002]
310	[581, 582]	1407	[2121, 1932]	2504	[1703, 554]	3601	[4138, 2255]
311	[583, 584]	1408	[2122, 157]	2505	[635, 3364]	3602	[4139, 360]
312	[585, 586]	1409	[1798, 1597]	2506	[3365, 666]	3603	[4140, 415]
313	[587, 209]	1410	[2123, 616]	2507	[1937, 3211]	3604	[2879, 89]
314	[588, 589]	1411	[2124, 2125]	2508	[623, 3250]	3605	[4141, 4142]
315	[590, 591]	1412	[1683, 726]	2509	[1942, 3366]	3606	[4143, 3030]
316	[190, 592]	1413	[2126, 1529]	2510	[218, 2075]	3607	[4088, 1491]
317	[593, 594]	1414	[2127, 2089]	2511	[3367, 736]	3608	[4144, 4145]
318	[570, 10]	1415	[2128, 2103]	2512	[3368, 841]	3609	[112, 1368]
319	[595, 596]	1416	[1944, 2129]	2513	[1907, 3369]	3610	[4146, 447]
320	[597, 598]	1417	[2130, 2117]	2514	[798, 791]	3611	[4147, 4148]
321	[599, 600]	1418	[2073, 754]	2515	[703, 3170]	3612	[4149, 365]
322	[601, 516]	1419	[2131, 1749]	2516	[3370, 1829]	3613	[4150, 3978]
323	[602, 603]	1420	[2074, 844]	2517	[3371, 532]	3614	[4151, 1021]
324	[235, 604]	1421	[2132, 552]	2518	[678, 1812]	3615	[4152, 4153]
325	[605, 606]	1422	[2133, 501]	2519	[520, 3372]	3616	[4154, 4155]
326	[607, 608]	1423	[1789, 1940]	2520	[1800, 218]	3617	[4156, 4157]

327	[609, 610]	1424	[34, 560]	2521	[2049, 762]	3618	[104, 4158]
328	[611, 612]	1425	[1971, 169]	2522	[3330, 1746]	3619	[4159, 121]
329	[613, 598]	1426	[775, 2134]	2523	[3225, 203]	3620	[4160, 1096]
330	[614, 615]	1427	[2019, 1770]	2524	[196, 3255]	3621	[4161, 2409]
331	[616, 612]	1428	[2070, 2135]	2525	[3373, 14]	3622	[4162, 3707]
332	[617, 618]	1429	[2009, 1848]	2526	[1751, 3374]	3623	[1177, 1135]
333	[619, 620]	1430	[2136, 1961]	2527	[488, 1642]	3624	[4163, 395]
334	[621, 622]	1431	[786, 1733]	2528	[3375, 1848]	3625	[4164, 4165]
335	[623, 624]	1432	[2137, 217]	2529	[1631, 1831]	3626	[4166, 2379]
336	[625, 626]	1433	[1571, 2138]	2530	[3376, 755]	3627	[4167, 2329]
337	[627, 628]	1434	[1555, 2139]	2531	[3192, 749]	3628	[1318, 4168]
338	[629, 630]	1435	[2055, 1616]	2532	[7, 501]	3629	[2337, 1120]
339	[631, 632]	1436	[1729, 648]	2533	[717, 848]	3630	[4169, 2694]
340	[633, 634]	1437	[2140, 2141]	2534	[1595, 1695]	3631	[2529, 1295]
341	[635, 636]	1438	[2142, 1714]	2535	[766, 729]	3632	[415, 4170]
342	[637, 638]	1439	[2143, 2144]	2536	[813, 165]	3633	[4171, 1513]
343	[639, 640]	1440	[2145, 1959]	2537	[3377, 3167]	3634	[4172, 3717]
344	[641, 642]	1441	[2146, 2147]	2538	[852, 3378]	3635	[1436, 1204]
345	[643, 644]	1442	[544, 555]	2539	[1667, 3337]	3636	[3971, 4173]
346	[645, 646]	1443	[2148, 591]	2540	[3379, 1832]	3637	[4174, 4175]
347	[647, 648]	1444	[2149, 527]	2541	[2142, 3380]	3638	[2410, 3733]
348	[649, 650]	1445	[524, 1842]	2542	[3381, 824]	3639	[4176, 2285]
349	[651, 652]	1446	[2150, 1949]	2543	[599, 222]	3640	[4177, 1031]
350	[653, 579]	1447	[2151, 1973]	2544	[723, 3382]	3641	[428, 2486]
351	[633, 654]	1448	[2152, 628]	2545	[2187, 3165]	3642	[4178, 2373]
352	[655, 656]	1449	[2153, 2154]	2546	[501, 3228]	3643	[1161, 4179]
353	[657, 658]	1450	[2155, 744]	2547	[2095, 56]	3644	[4180, 3070]
354	[659, 660]	1451	[2156, 626]	2548	[3383, 3246]	3645	[4181, 2302]
355	[661, 36]	1452	[2157, 2158]	2549	[1957, 3227]	3646	[2260, 377]
356	[662, 634]	1453	[2153, 2159]	2550	[3384, 3385]	3647	[4182, 2526]
357	[663, 664]	1454	[2160, 2161]	2551	[1736, 1763]	3648	[4183, 1078]
358	[665, 666]	1455	[2162, 2163]	2552	[1724, 1650]	3649	[1432, 1231]
359	[667, 668]	1456	[2164, 676]	2553	[3386, 575]	3650	[4184, 3984]
360	[669, 670]	1457	[551, 131]	2554	[564, 3387]	3651	[4185, 4165]
361	[671, 672]	1458	[2165, 2044]	2555	[3289, 3388]	3652	[4186, 1551]
362	[673, 674]	1459	[517, 668]	2556	[2105, 828]	3653	[718, 3233]
363	[675, 676]	1460	[1855, 2166]	2557	[2025, 3339]	3654	[1886, 2120]
364	[677, 678]	1461	[2167, 546]	2558	[3389, 708]	3655	[2043, 2185]
365	[679, 680]	1462	[2132, 131]	2559	[1622, 708]	3656	[1859, 1520]
366	[579, 159]	1463	[1720, 2168]	2560	[590, 2088]	3657	[796, 1776]
367	[681, 682]	1464	[2137, 1908]	2561	[3257, 3390]	3658	[1918, 623]
368	[586, 683]	1465	[2169, 683]	2562	[1937, 3387]	3659	[3239, 4187]
369	[684, 484]	1466	[1998, 2170]	2563	[3159, 3391]	3660	[3276, 3430]
370	[685, 180]	1467	[13, 1583]	2564	[131, 1949]	3661	[3514, 163]

371	[686, 687]	1468	[2171, 712]	2565	[487, 757]	3662	[3591, 1835]
372	[688, 689]	1469	[2172, 2173]	2566	[3392, 3393]	3663	[2139, 1579]
373	[690, 691]	1470	[2041, 1926]	2567	[1600, 3394]	3664	[1816, 3369]
374	[692, 693]	1471	[2174, 608]	2568	[3395, 1742]	3665	[1640, 3208]
375	[49, 694]	1472	[2175, 1974]	2569	[8, 502]	3666	[619, 3424]
376	[695, 696]	1473	[1689, 2089]	2570	[1804, 1954]	3667	[3588, 2170]
377	[45, 697]	1474	[2176, 2177]	2571	[3396, 3207]	3668	[3570, 1885]
378	[698, 699]	1475	[1680, 2088]	2572	[3397, 837]	3669	[144, 652]
379	[700, 701]	1476	[597, 1528]	2573	[2107, 3284]	3670	[4188, 1536]
380	[702, 703]	1477	[1679, 727]	2574	[1562, 3338]	3671	[3212, 1719]
381	[704, 590]	1478	[2178, 2141]	2575	[1797, 3372]	3672	[4189, 636]
382	[705, 706]	1479	[1979, 2179]	2576	[146, 838]	3673	[4190, 2159]
383	[707, 519]	1480	[2180, 1547]	2577	[3398, 1872]	3674	[4191, 180]
384	[708, 709]	1481	[489, 2099]	2578	[3399, 3400]	3675	[3587, 840]
385	[710, 711]	1482	[2155, 1638]	2579	[3401, 776]	3676	[3563, 191]
386	[712, 713]	1483	[768, 1739]	2580	[3249, 709]	3677	[483, 3391]
387	[714, 589]	1484	[2181, 1607]	2581	[2026, 1826]	3678	[3304, 1560]
388	[715, 716]	1485	[2182, 1880]	2582	[3299, 755]	3679	[1998, 2018]
389	[717, 718]	1486	[643, 2183]	2583	[3402, 3403]	3680	[3637, 727]
390	[719, 720]	1487	[2184, 1906]	2584	[627, 3404]	3681	[850, 1655]
391	[721, 722]	1488	[2165, 2185]	2585	[665, 3405]	3682	[4192, 823]
392	[723, 724]	1489	[1623, 707]	2586	[790, 1561]	3683	[3241, 1790]
393	[725, 726]	1490	[2186, 1971]	2587	[3232, 1819]	3684	[199, 2058]
394	[719, 727]	1491	[622, 2187]	2588	[2088, 740]	3685	[577, 653]
395	[728, 579]	1492	[2188, 2189]	2589	[3406, 196]	3686	[3256, 1787]
396	[200, 729]	1493	[1543, 1690]	2590	[1768, 3407]	3687	[1592, 3164]
397	[730, 731]	1494	[2190, 550]	2591	[3408, 703]	3688	[2115, 1704]
398	[732, 550]	1495	[1872, 2191]	2592	[3409, 205]	3689	[846, 1712]
399	[733, 734]	1496	[2192, 803]	2593	[3410, 3411]	3690	[602, 3298]
400	[735, 736]	1497	[2193, 1694]	2594	[3412, 3399]	3691	[772, 818]
401	[737, 738]	1498	[201, 2194]	2595	[1843, 2086]	3692	[3421, 1625]
402	[662, 654]	1499	[2195, 560]	2596	[3413, 3317]	3693	[4193, 3611]
403	[739, 740]	1500	[2196, 2197]	2597	[3414, 3229]	3694	[3574, 3257]
404	[741, 742]	1501	[2061, 2198]	2598	[3415, 1673]	3695	[715, 1546]
405	[743, 744]	1502	[2128, 2199]	2599	[739, 3416]	3696	[3486, 1938]
406	[745, 56]	1503	[2200, 2066]	2600	[1608, 3417]	3697	[2062, 807]
407	[746, 747]	1504	[2169, 2201]	2601	[2139, 138]	3698	[1699, 1625]
408	[748, 749]	1505	[2202, 1721]	2602	[3418, 3339]	3699	[4194, 525]
409	[750, 751]	1506	[685, 2203]	2603	[2189, 3390]	3700	[2088, 3416]
410	[752, 753]	1507	[2012, 2204]	2604	[566, 3419]	3701	[3433, 3544]
411	[754, 755]	1508	[2205, 604]	2605	[847, 718]	3702	[4195, 759]
412	[756, 757]	1509	[2206, 2207]	2606	[565, 1942]	3703	[3461, 1752]
413	[758, 759]	1510	[1897, 2082]	2607	[3420, 1703]	3704	[705, 3179]
414	[760, 761]	1511	[1637, 744]	2608	[3421, 1700]	3705	[748, 2087]

415	[762, 229]	1512	[2208, 2134]	2609	[1628, 2004]	3706	[4190, 2154]
416	[763, 764]	1513	[2209, 2082]	2610	[3422, 3423]	3707	[3493, 1995]
417	[765, 245]	1514	[2210, 946]	2611	[1571, 3205]	3708	[2114, 1790]
418	[766, 201]	1515	[2211, 2212]	2612	[1580, 3424]	3709	[789, 3247]
419	[767, 768]	1516	[2213, 2214]	2613	[777, 583]	3710	[162, 1746]
420	[679, 161]	1517	[2215, 2216]	2614	[3291, 3284]	3711	[542, 768]
421	[745, 769]	1518	[2217, 1248]	2615	[3425, 559]	3712	[4196, 2044]
422	[770, 771]	1519	[2218, 2219]	2616	[3426, 36]	3713	[519, 1702]
423	[772, 773]	1520	[1221, 2220]	2617	[3427, 3428]	3714	[4197, 1893]
424	[532, 774]	1521	[2221, 928]	2618	[3429, 3430]	3715	[2171, 1687]
425	[775, 776]	1522	[2222, 2223]	2619	[3431, 829]	3716	[3555, 183]
426	[777, 778]	1523	[2224, 856]	2620	[3432, 745]	3717	[4198, 1965]
427	[779, 618]	1524	[2225, 2226]	2621	[3433, 3217]	3718	[1719, 220]
428	[780, 781]	1525	[2227, 2228]	2622	[3434, 1930]	3719	[4199, 1562]
429	[782, 783]	1526	[2229, 2230]	2623	[517, 1611]	3720	[184, 4200]
430	[784, 785]	1527	[2231, 1005]	2624	[3435, 3436]	3721	[4201, 3161]
431	[786, 787]	1528	[2232, 2233]	2625	[3437, 733]	3722	[3622, 1526]
432	[788, 789]	1529	[2234, 2235]	2626	[651, 145]	3723	[2081, 1537]
433	[790, 791]	1530	[2236, 2237]	2627	[556, 1706]	3724	[1911, 1799]
434	[792, 793]	1531	[2238, 1116]	2628	[3438, 2198]	3725	[3638, 1694]
435	[794, 795]	1532	[956, 2239]	2629	[1566, 591]	3726	[3272, 140]
436	[156, 796]	1533	[2240, 2241]	2630	[585, 2169]	3727	[4202, 1624]
437	[797, 798]	1534	[1175, 1510]	2631	[3439, 175]	3728	[1605, 3424]
438	[799, 800]	1535	[2242, 2243]	2632	[1825, 2027]	3729	[543, 1739]
439	[801, 734]	1536	[2244, 2245]	2633	[1703, 2072]	3730	[4203, 2092]
440	[802, 803]	1537	[2246, 2247]	2634	[3196, 676]	3731	[659, 3508]
441	[804, 805]	1538	[2248, 2249]	2635	[733, 2079]	3732	[4204, 824]
442	[806, 807]	1539	[2250, 2251]	2636	[1691, 1611]	3733	[1768, 1895]
443	[808, 809]	1540	[2252, 2253]	2637	[202, 1860]	3734	[4205, 3628]
444	[810, 811]	1541	[2254, 376]	2638	[1621, 544]	3735	[830, 1518]
445	[812, 668]	1542	[2255, 2256]	2639	[1702, 1695]	3736	[1926, 1993]
446	[813, 814]	1543	[2257, 2258]	2640	[1965, 566]	3737	[4206, 2147]
447	[815, 816]	1544	[2259, 2260]	2641	[3440, 1635]	3738	[4207, 500]
448	[817, 818]	1545	[2261, 2262]	2642	[1941, 566]	3739	[4208, 596]
449	[206, 819]	1546	[1508, 2263]	2643	[1976, 615]	3740	[3621, 1642]
450	[820, 821]	1547	[2264, 2265]	2644	[3218, 3441]	3741	[820, 3185]
451	[174, 183]	1548	[2266, 2267]	2645	[2106, 3258]	3742	[2032, 3382]
452	[817, 773]	1549	[299, 2268]	2646	[3166, 3442]	3743	[713, 3278]
453	[822, 207]	1550	[2269, 2270]	2647	[2207, 1643]	3744	[2090, 608]
454	[823, 732]	1551	[1376, 2271]	2648	[1697, 3443]	3745	[3396, 1640]
455	[194, 722]	1552	[2272, 2273]	2649	[716, 1547]	3746	[3543, 531]
456	[824, 825]	1553	[2274, 2275]	2650	[732, 1869]	3747	[616, 849]
457	[826, 827]	1554	[279, 2276]	2651	[245, 2191]	3748	[1584, 715]
458	[828, 526]	1555	[2277, 269]	2652	[3444, 46]	3749	[1893, 1914]

459	[154, 829]	1556	[2278, 2279]	2653	[3445, 2205]	3750	[2106, 3170]
460	[830, 831]	1557	[2280, 2281]	2654	[3409, 188]	3751	[2048, 3548]
461	[832, 556]	1558	[2282, 457]	2655	[1672, 3446]	3752	[1802, 1604]
462	[833, 834]	1559	[1121, 983]	2656	[3312, 209]	3753	[2156, 1610]
463	[835, 836]	1560	[2283, 2284]	2657	[3447, 512]	3754	[4209, 753]
464	[215, 837]	1561	[2285, 2286]	2658	[3335, 187]	3755	[4201, 3558]
465	[694, 838]	1562	[2287, 2288]	2659	[40, 732]	3756	[61, 4210]
466	[204, 188]	1563	[2289, 2290]	2660	[3448, 3449]	3757	[2158, 623]
467	[839, 840]	1564	[2291, 2292]	2661	[1726, 1887]	3758	[553, 2072]
468	[841, 842]	1565	[2293, 120]	2662	[1780, 691]	3759	[485, 4211]
469	[843, 844]	1566	[18, 884]	2663	[3450, 840]	3760	[639, 761]
470	[845, 846]	1567	[2294, 2295]	2664	[1760, 1522]	3761	[3427, 1904]
471	[847, 848]	1568	[2296, 2297]	2665	[3451, 534]	3762	[4212, 4213]
472	[849, 850]	1569	[2298, 865]	2666	[2017, 2170]	3763	[1687, 713]
473	[851, 852]	1570	[2299, 2300]	2667	[694, 147]	3764	[4214, 580]
474	[853, 569]	1571	[2301, 2302]	2668	[3438, 492]	3765	[50, 147]
475	[854, 855]	1572	[2303, 85]	2669	[3452, 2209]	3766	[1921, 54]
476	[856, 857]	1573	[472, 2295]	2670	[1881, 3453]	3767	[1849, 641]
477	[858, 250]	1574	[2304, 1111]	2671	[689, 1627]	3768	[3242, 519]
478	[859, 860]	1575	[2305, 2255]	2672	[536, 1779]	3769	[4215, 1515]
479	[861, 862]	1576	[265, 2306]	2673	[3454, 3423]	3770	[1779, 1894]
480	[863, 864]	1577	[1111, 2307]	2674	[228, 3355]	3771	[684, 3391]
481	[865, 866]	1578	[972, 2308]	2675	[3455, 761]	3772	[1596, 1799]
482	[867, 868]	1579	[2309, 2310]	2676	[1987, 1925]	3773	[557, 1623]
483	[869, 71]	1580	[1135, 2311]	2677	[3456, 615]	3774	[646, 4216]
484	[870, 871]	1581	[2312, 1458]	2678	[1837, 1645]	3775	[4205, 1935]
485	[872, 873]	1582	[64, 2313]	2679	[3383, 3296]	3776	[576, 1706]
486	[874, 875]	1583	[2314, 2315]	2680	[50, 838]	3777	[191, 3537]
487	[876, 340]	1584	[2316, 1284]	2681	[3457, 1932]	3778	[4217, 1722]
488	[877, 878]	1585	[2317, 2264]	2682	[3458, 2156]	3779	[1772, 1808]
489	[879, 880]	1586	[2318, 866]	2683	[3399, 1821]	3780	[3375, 52]
490	[881, 882]	1587	[2319, 2320]	2684	[1786, 1899]	3781	[1737, 1994]
491	[883, 884]	1588	[2321, 2322]	2685	[2082, 10]	3782	[529, 1944]
492	[448, 885]	1589	[2323, 2324]	2686	[852, 3244]	3783	[4218, 1669]
493	[886, 887]	1590	[2325, 2326]	2687	[1684, 193]	3784	[2054, 1631]
494	[888, 889]	1591	[2327, 435]	2688	[848, 3459]	3785	[4219, 8]
495	[890, 891]	1592	[2328, 2329]	2689	[631, 608]	3786	[1626, 1858]
496	[892, 893]	1593	[2330, 2331]	2690	[1885, 3361]	3787	[2131, 140]
497	[894, 324]	1594	[1393, 2332]	2691	[2157, 664]	3788	[3471, 1660]
498	[895, 896]	1595	[1269, 2333]	2692	[3460, 3283]	3789	[3515, 3166]
499	[370, 897]	1596	[2334, 2335]	2693	[1989, 56]	3790	[4209, 701]
500	[325, 898]	1597	[2336, 2337]	2694	[3461, 3374]	3791	[1871, 1560]
501	[899, 900]	1598	[2338, 1173]	2695	[1719, 3200]	3792	[3518, 1524]
502	[16, 901]	1599	[2339, 2340]	2696	[3462, 3463]	3793	[1958, 3162]

503	[902, 903]	1600	[2341, 2342]	2697	[3464, 3465]	3794	[1977, 3173]
504	[904, 905]	1601	[2343, 2344]	2698	[3268, 201]	3795	[4220, 2131]
505	[906, 907]	1602	[2345, 2346]	2699	[3466, 2050]	3796	[3477, 52]
506	[908, 909]	1603	[2347, 2348]	2700	[3467, 3206]	3797	[1960, 2050]
507	[910, 911]	1604	[2349, 2350]	2701	[2034, 2125]	3798	[1832, 226]
508	[912, 913]	1605	[2351, 2352]	2702	[3468, 3453]	3799	[2130, 3498]
509	[914, 915]	1606	[2353, 1483]	2703	[3332, 1583]	3800	[1927, 3318]
510	[916, 917]	1607	[2354, 2355]	2704	[3469, 3213]	3801	[2122, 796]
511	[918, 336]	1608	[2356, 2357]	2705	[3470, 2135]	3802	[3280, 3632]
512	[919, 920]	1609	[2358, 2347]	2706	[3471, 1594]	3803	[1932, 787]
513	[921, 93]	1610	[2359, 2360]	2707	[2201, 497]	3804	[3526, 3528]
514	[922, 923]	1611	[78, 2361]	2708	[1636, 3413]	3805	[1782, 2192]
515	[924, 925]	1612	[2362, 2363]	2709	[3472, 586]	3806	[657, 3278]
516	[926, 927]	1613	[2364, 2365]	2710	[3473, 3474]	3807	[4221, 2033]
517	[928, 395]	1614	[2366, 2367]	2711	[1901, 3475]	3808	[4222, 1792]
518	[929, 930]	1615	[1034, 2343]	2712	[3455, 640]	3809	[3348, 136]
519	[931, 932]	1616	[2368, 2369]	2713	[1738, 3476]	3810	[2100, 1664]
520	[933, 934]	1617	[2370, 2371]	2714	[3477, 1848]	3811	[3494, 1835]
521	[935, 936]	1618	[2372, 2373]	2715	[1815, 1664]	3812	[2003, 2014]
522	[937, 938]	1619	[2374, 2375]	2716	[1763, 1809]	3813	[3462, 3361]
523	[426, 939]	1620	[2376, 2377]	2717	[53, 1862]	3814	[1758, 3532]
524	[940, 941]	1621	[2378, 2379]	2718	[3209, 1886]	3815	[1759, 3229]
525	[942, 943]	1622	[2380, 1268]	2719	[3266, 1929]	3816	[4223, 1595]
526	[944, 945]	1623	[1357, 1442]	2720	[1841, 558]	3817	[3261, 832]
527	[946, 947]	1624	[2381, 1025]	2721	[2022, 1970]	3818	[4224, 1622]
528	[437, 948]	1625	[1085, 385]	2722	[722, 225]	3819	[4225, 1721]
529	[949, 950]	1626	[2382, 121]	2723	[1794, 3478]	3820	[1602, 4226]
530	[951, 952]	1627	[1293, 2383]	2724	[610, 1980]	3821	[4227, 228]
531	[953, 954]	1628	[2384, 2385]	2725	[3479, 50]	3822	[2189, 3323]
532	[955, 956]	1629	[2386, 2387]	2726	[3480, 3353]	3823	[1980, 2047]
533	[957, 958]	1630	[2388, 2389]	2727	[1803, 3481]	3824	[738, 642]
534	[959, 960]	1631	[2390, 2391]	2728	[3482, 718]	3825	[230, 4226]
535	[961, 962]	1632	[1479, 2392]	2729	[3483, 3316]	3826	[3398, 245]
536	[963, 964]	1633	[2393, 2394]	2730	[851, 1677]	3827	[1803, 4228]
537	[965, 966]	1634	[2395, 2396]	2731	[3484, 3485]	3828	[3420, 1695]
538	[967, 968]	1635	[2397, 2398]	2732	[2083, 522]	3829	[3288, 533]
539	[969, 970]	1636	[2399, 2400]	2733	[163, 3362]	3830	[3379, 610]
540	[971, 972]	1637	[2401, 80]	2734	[3486, 850]	3831	[4202, 3421]
541	[973, 974]	1638	[2402, 2403]	2735	[3487, 1542]	3832	[3313, 4200]
542	[975, 976]	1639	[2404, 1257]	2736	[3224, 2028]	3833	[4229, 44]
543	[977, 978]	1640	[2405, 2406]	2737	[3331, 479]	3834	[3305, 1758]
544	[307, 979]	1641	[2407, 1320]	2738	[1924, 695]	3835	[4230, 1703]
545	[980, 981]	1642	[406, 2408]	2739	[567, 501]	3836	[1903, 3428]
546	[982, 983]	1643	[2409, 2410]	2740	[804, 3485]	3837	[3259, 646]

547	[984, 985]	1644	[2411, 1042]	2741	[561, 1742]	3838	[3612, 620]
548	[986, 987]	1645	[2412, 2413]	2742	[3488, 712]	3839	[3506, 3628]
549	[988, 989]	1646	[2414, 1150]	2743	[3489, 3490]	3840	[646, 4231]
550	[990, 991]	1647	[2415, 1358]	2744	[3491, 3353]	3841	[4232, 2194]
551	[992, 993]	1648	[2416, 2417]	2745	[3492, 1763]	3842	[3547, 3337]
552	[994, 441]	1649	[2418, 2419]	2746	[3493, 53]	3843	[133, 2204]
553	[995, 996]	1650	[2420, 2421]	2747	[3494, 1993]	3844	[508, 240]
554	[461, 997]	1651	[2422, 2423]	2748	[3176, 149]	3845	[1558, 1578]
555	[998, 999]	1652	[2424, 2425]	2749	[545, 1874]	3846	[1730, 133]
556	[366, 1000]	1653	[2426, 2427]	2750	[1651, 3495]	3847	[4233, 3639]
557	[996, 1001]	1654	[2428, 1284]	2751	[3496, 1956]	3848	[3306, 2198]
558	[1002, 1003]	1655	[1507, 2429]	2752	[2143, 60]	3849	[1585, 716]
559	[1004, 1005]	1656	[2430, 2250]	2753	[3497, 3385]	3850	[3452, 1897]
560	[68, 1006]	1657	[2431, 2432]	2754	[1866, 1833]	3851	[3531, 701]
561	[1007, 1008]	1658	[2324, 2433]	2755	[3354, 3498]	3852	[4230, 1695]
562	[1009, 1010]	1659	[2434, 1337]	2756	[3487, 1914]	3853	[4234, 2081]
563	[1011, 1012]	1660	[2435, 2436]	2757	[3499, 3391]	3854	[3529, 722]
564	[1013, 1014]	1661	[2437, 2438]	2758	[601, 38]	3855	[4235, 1682]
565	[1015, 1016]	1662	[2342, 2439]	2759	[1549, 2001]	3856	[1925, 4211]
566	[1006, 1017]	1663	[1055, 2440]	2760	[3500, 1593]	3857	[4225, 2168]
567	[1018, 1019]	1664	[2441, 423]	2761	[3501, 1722]	3858	[756, 488]
568	[1020, 1021]	1665	[2442, 2443]	2762	[3182, 53]	3859	[1814, 1930]
569	[1022, 1023]	1666	[281, 2444]	2763	[3502, 1724]	3860	[3553, 550]
570	[1024, 1025]	1667	[2445, 2446]	2764	[3467, 695]	3861	[3435, 3610]
571	[1026, 1027]	1668	[2447, 2448]	2765	[3503, 3476]	3862	[4236, 841]
572	[1028, 1004]	1669	[2449, 2450]	2766	[165, 3495]	3863	[2118, 546]
573	[1029, 1030]	1670	[2451, 2452]	2767	[2194, 771]	3864	[845, 678]
574	[1031, 1032]	1671	[2453, 2454]	2768	[1639, 3207]	3865	[3599, 1568]
575	[1033, 1034]	1672	[2455, 439]	2769	[2194, 1762]	3866	[1910, 3639]
576	[1035, 1036]	1673	[2456, 2457]	2770	[2050, 46]	3867	[4237, 1656]
577	[999, 1037]	1674	[2458, 1106]	2771	[785, 606]	3868	[3295, 4187]
578	[1038, 989]	1675	[2459, 1105]	2772	[3504, 180]	3869	[3520, 3595]
579	[1037, 1039]	1676	[2460, 2461]	2773	[3505, 53]	3870	[3561, 1622]
580	[1040, 1041]	1677	[2462, 2463]	2774	[783, 2037]	3871	[3607, 1806]
581	[1042, 1043]	1678	[2464, 1468]	2775	[3466, 45]	3872	[3651, 532]
582	[1044, 1045]	1679	[2465, 2466]	2776	[1863, 1631]	3873	[1823, 1913]
583	[1046, 1047]	1680	[2467, 2468]	2777	[1722, 3506]	3874	[4238, 3326]
584	[1048, 1049]	1681	[2469, 2397]	2778	[676, 1709]	3875	[3329, 578]
585	[1050, 1051]	1682	[2470, 2471]	2779	[3279, 227]	3876	[3522, 3257]
586	[1052, 1053]	1683	[2472, 2473]	2780	[2042, 1993]	3877	[1678, 191]
587	[1054, 1055]	1684	[2377, 908]	2781	[3507, 3508]	3878	[4239, 220]
588	[1056, 1032]	1685	[2474, 2475]	2782	[3509, 47]	3879	[583, 3192]
589	[1057, 1046]	1686	[2476, 2477]	2783	[641, 3510]	3880	[729, 770]
590	[1058, 1059]	1687	[943, 2478]	2784	[3511, 3318]	3881	[4240, 626]

591	[120, 1060]	1688	[2479, 2480]	2785	[3458, 625]	3882	[1677, 3378]
592	[1061, 1062]	1689	[2481, 2482]	2786	[2164, 1968]	3883	[1544, 1891]
593	[1063, 1064]	1690	[2483, 2484]	2787	[1870, 3304]	3884	[2129, 2097]
594	[1065, 1066]	1691	[2485, 1271]	2788	[210, 2067]	3885	[589, 3568]
595	[1067, 1068]	1692	[2486, 2487]	2789	[3512, 505]	3886	[3389, 1623]
596	[1069, 1058]	1693	[2488, 2489]	2790	[3191, 3179]	3887	[3172, 2094]
597	[1070, 70]	1694	[2490, 1426]	2791	[1636, 3316]	3888	[3517, 3219]
598	[106, 1071]	1695	[932, 2380]	2792	[1624, 1700]	3889	[4241, 236]
599	[1072, 1073]	1696	[2491, 2492]	2793	[2201, 3289]	3890	[3502, 1649]
600	[1074, 1075]	1697	[2493, 25]	2794	[3513, 1779]	3891	[1792, 760]
601	[1076, 1077]	1698	[2494, 322]	2795	[12, 1944]	3892	[1647, 639]
602	[1078, 1079]	1699	[2495, 2496]	2796	[3464, 3490]	3893	[4242, 797]
603	[1080, 1081]	1700	[463, 2497]	2797	[3514, 1746]	3894	[3536, 2094]
604	[1082, 1083]	1701	[2498, 2499]	2798	[3515, 3377]	3895	[3357, 616]
605	[1084, 1085]	1702	[2500, 2501]	2799	[3516, 613]	3896	[1523, 475]
606	[1086, 1087]	1703	[2499, 2502]	2800	[3517, 3441]	3897	[3617, 4210]
607	[1088, 1089]	1704	[1704, 1704]	2801	[3215, 1721]	3898	[3542, 508]
608	[1090, 1091]	1705	[1489, 1040]	2802	[203, 1861]	3899	[3426, 1590]
609	[1092, 1093]	1706	[2503, 2504]	2803	[3518, 475]	3900	[1659, 1594]
610	[1094, 1095]	1707	[2505, 2506]	2804	[3384, 3519]	3901	[4243, 2161]
611	[1096, 1097]	1708	[1351, 2422]	2805	[3520, 3449]	3902	[1828, 674]
612	[1098, 1030]	1709	[1214, 2507]	2806	[3521, 1832]	3903	[4244, 1893]
613	[1099, 1100]	1710	[257, 2296]	2807	[3522, 2189]	3904	[1572, 41]
614	[1101, 1102]	1711	[2508, 474]	2808	[1887, 195]	3905	[3247, 1935]
615	[1103, 1104]	1712	[1218, 2509]	2809	[3523, 718]	3906	[3275, 1809]
616	[1105, 1106]	1713	[2510, 1495]	2810	[2126, 594]	3907	[2010, 1754]
617	[1107, 1108]	1714	[2511, 2512]	2811	[1856, 533]	3908	[2040, 4213]
618	[456, 1109]	1715	[2513, 1053]	2812	[3484, 805]	3909	[3352, 2131]
619	[1110, 1111]	1716	[2514, 2515]	2813	[3524, 505]	3910	[3604, 3423]
620	[1112, 1113]	1717	[2516, 1209]	2814	[2193, 1785]	3911	[1974, 2052]
621	[1114, 1115]	1718	[2517, 423]	2815	[3439, 183]	3912	[3363, 653]
622	[1116, 1117]	1719	[2518, 2514]	2816	[1744, 2173]	3913	[3451, 499]
623	[1118, 1119]	1720	[2519, 1093]	2817	[3525, 201]	3914	[1827, 189]
624	[1120, 1121]	1721	[2520, 2521]	2818	[3526, 3280]	3915	[4245, 3280]
625	[1122, 1123]	1722	[2522, 2523]	2819	[3450, 1866]	3916	[4241, 604]
626	[1124, 1125]	1723	[983, 2524]	2820	[1686, 828]	3917	[3183, 2205]
627	[1126, 1127]	1724	[2525, 2526]	2821	[622, 3164]	3918	[1864, 674]
628	[1128, 1129]	1725	[2527, 1253]	2822	[3527, 3257]	3919	[3186, 2192]
629	[1130, 1131]	1726	[2528, 2529]	2823	[3210, 2103]	3920	[1938, 3227]
630	[1132, 1133]	1727	[2530, 1250]	2824	[3528, 3281]	3921	[3506, 1935]
631	[1134, 1135]	1728	[2286, 2531]	2825	[1693, 1785]	3922	[674, 3319]
632	[1136, 1137]	1729	[2532, 260]	2826	[1874, 1520]	3923	[3430, 3269]
633	[1138, 1139]	1730	[2533, 112]	2827	[3529, 195]	3924	[3499, 484]
634	[1140, 1141]	1731	[2534, 2519]	2828	[3530, 1878]	3925	[2013, 792]

635	[1142, 1143]	1732	[2535, 2536]	2829	[3531, 753]	3926	[1565, 590]
636	[1144, 1145]	1733	[295, 2537]	2830	[1808, 3532]	3927	[1577, 1900]
637	[1146, 1147]	1734	[1244, 2538]	2831	[3500, 1659]	3928	[3260, 4231]
638	[1148, 1149]	1735	[2539, 2451]	2832	[1769, 2020]	3929	[3539, 2183]
639	[1150, 1151]	1736	[2540, 2541]	2833	[3509, 781]	3930	[3635, 4213]
640	[1152, 1153]	1737	[2542, 257]	2834	[3533, 1792]	3931	[40, 3553]
641	[1154, 1155]	1738	[2241, 2543]	2835	[605, 242]	3932	[3603, 3280]
642	[1156, 1157]	1739	[2544, 2545]	2836	[2011, 133]	3933	[692, 1932]
643	[1158, 1159]	1740	[1423, 2546]	2837	[3408, 2106]	3934	[4246, 1562]
644	[1160, 1161]	1741	[2547, 2548]	2838	[3534, 1652]	3935	[4198, 565]
645	[1162, 1163]	1742	[2549, 2550]	2839	[3535, 2097]	3936	[1848, 3618]
646	[1164, 1165]	1743	[2551, 2552]	2840	[3434, 809]	3937	[4224, 557]
647	[1166, 1167]	1744	[2553, 456]	2841	[3536, 581]	3938	[2052, 2028]
648	[1168, 262]	1745	[2554, 2555]	2842	[167, 2097]	3939	[4213, 670]
649	[1169, 1170]	1746	[2556, 2557]	2843	[3377, 3442]	3940	[4243, 3640]
650	[1171, 1080]	1747	[2558, 383]	2844	[592, 3537]	3941	[4245, 3528]
651	[1172, 1173]	1748	[1442, 2559]	2845	[3538, 1565]	3942	[4244, 1753]
652	[1174, 1175]	1749	[2560, 2561]	2846	[556, 577]	3943	[1830, 1632]
653	[1176, 1177]	1750	[978, 2562]	2847	[189, 3318]	3944	[1975, 2028]
654	[1178, 1179]	1751	[2563, 2564]	2848	[3539, 644]	3945	[3430, 2166]
655	[1180, 1181]	1752	[2565, 2566]	2849	[1854, 3430]	3946	[789, 3506]
656	[1182, 1183]	1753	[2567, 433]	2850	[1845, 234]	3947	[3540, 232]
657	[1184, 1097]	1754	[2568, 2270]	2851	[2038, 1996]	3948	[1588, 247]
658	[1185, 1186]	1755	[4, 2569]	2852	[784, 605]	3949	[4247, 1882]
659	[1187, 1052]	1756	[2570, 1228]	2853	[3540, 149]	3950	[823, 3553]
660	[1188, 1189]	1757	[2571, 2572]	2854	[3541, 797]	3951	[4248, 653]
661	[1190, 1191]	1758	[2573, 957]	2855	[3542, 239]	3952	[4249, 1657]
662	[1192, 1193]	1759	[2574, 1303]	2856	[3373, 1583]	3953	[4250, 2087]
663	[1194, 253]	1760	[2575, 76]	2857	[3303, 159]	3954	[637, 630]
664	[1195, 1196]	1761	[2576, 2577]	2858	[3543, 834]	3955	[1539, 639]
665	[1197, 1198]	1762	[862, 2578]	2859	[3544, 1551]	3956	[3368, 547]
666	[1199, 1200]	1763	[2579, 2289]	2860	[3504, 2203]	3957	[4251, 2154]
667	[76, 931]	1764	[1257, 1077]	2861	[1835, 2101]	3958	[3422, 3605]
668	[1201, 1202]	1765	[2580, 2581]	2862	[690, 1781]	3959	[738, 3510]
669	[1203, 1152]	1766	[2582, 2583]	2863	[3545, 829]	3960	[1934, 3628]
670	[1204, 1205]	1767	[2584, 2585]	2864	[3527, 2189]	3961	[3432, 1989]
671	[1206, 1178]	1768	[907, 2586]	2865	[1889, 560]	3962	[3633, 3377]
672	[1207, 1208]	1769	[2587, 2507]	2866	[1567, 3546]	3963	[4207, 535]
673	[1209, 1210]	1770	[1373, 2588]	2867	[3187, 1638]	3964	[4252, 572]
674	[1211, 1212]	1771	[2589, 2590]	2868	[3547, 1668]	3965	[3642, 1549]
675	[1213, 1214]	1772	[2591, 1102]	2869	[3425, 34]	3966	[3629, 138]
676	[1215, 1216]	1773	[2592, 2593]	2870	[128, 624]	3967	[3507, 660]
677	[1217, 1218]	1774	[2594, 862]	2871	[763, 3548]	3968	[3222, 3583]
678	[1219, 85]	1775	[2233, 974]	2872	[3549, 232]	3969	[814, 3495]

679	[1220, 1221]	1776	[2595, 2596]	2873	[2121, 693]	3970	[3376, 1834]
680	[1222, 1223]	1777	[2597, 2598]	2874	[1868, 831]	3971	[3314, 1791]
681	[1224, 957]	1778	[2599, 2600]	2875	[3550, 153]	3972	[802, 3157]
682	[1225, 1226]	1779	[1131, 2601]	2876	[1925, 486]	3973	[663, 2158]
683	[1051, 1227]	1780	[2602, 2603]	2877	[3551, 2111]	3974	[629, 638]
684	[1228, 100]	1781	[2268, 2604]	2878	[661, 1590]	3975	[1839, 3190]
685	[1229, 1089]	1782	[2605, 2606]	2879	[1618, 3361]	3976	[4232, 770]
686	[1230, 1231]	1783	[2607, 2307]	2880	[1606, 3552]	3977	[3188, 1732]
687	[1232, 1233]	1784	[2608, 1247]	2881	[741, 2093]	3978	[3333, 3274]
688	[1234, 1235]	1785	[2609, 2610]	2882	[3553, 1869]	3979	[3623, 2203]
689	[1236, 1237]	1786	[22, 2611]	2883	[232, 3554]	3980	[3300, 656]
690	[1238, 1239]	1787	[2612, 964]	2884	[3550, 2071]	3981	[3609, 3436]
691	[263, 1240]	1788	[2613, 310]	2885	[778, 584]	3982	[1984, 1616]
692	[1241, 1242]	1789	[2614, 2615]	2886	[3440, 1999]	3983	[4253, 36]
693	[1243, 1244]	1790	[2616, 948]	2887	[3555, 175]	3984	[3564, 3411]
694	[1245, 1246]	1791	[2617, 2618]	2888	[149, 3556]	3985	[2152, 3404]
695	[1247, 1239]	1792	[2619, 2620]	2889	[3557, 1706]	3986	[3460, 751]
696	[1248, 1249]	1793	[2621, 2622]	2890	[1706, 653]	3987	[3512, 1787]
697	[1250, 1251]	1794	[2623, 2279]	2891	[2080, 1536]	3988	[3535, 3251]
698	[1252, 1253]	1795	[2624, 2625]	2892	[2195, 1786]	3989	[4195, 1717]
699	[1254, 1255]	1796	[2626, 2627]	2893	[703, 3258]	3990	[4254, 1949]
700	[1256, 1257]	1797	[2628, 2629]	2894	[1527, 598]	3991	[746, 3403]
701	[1258, 1259]	1798	[1380, 299]	2895	[192, 1685]	3992	[2146, 3325]
702	[1260, 1261]	1799	[2630, 2631]	2896	[718, 3459]	3993	[1860, 3611]
703	[1262, 1263]	1800	[1301, 2281]	2897	[1521, 1761]	3994	[3634, 564]
704	[1068, 1264]	1801	[2632, 2633]	2898	[3160, 3558]	3995	[3483, 3413]
705	[1265, 1266]	1802	[2634, 2635]	2899	[3497, 3519]	3996	[2023, 535]
706	[1267, 1172]	1803	[2636, 2637]	2900	[3326, 825]	3997	[4255, 697]
707	[1268, 1269]	1804	[2638, 2639]	2901	[166, 2129]	3998	[3606, 1761]
708	[1270, 1271]	1805	[947, 2640]	2902	[525, 3559]	3999	[806, 2063]
709	[1272, 1273]	1806	[2641, 940]	2903	[3401, 2134]	4000	[3289, 498]
710	[1274, 1275]	1807	[2642, 442]	2904	[186, 3336]	4001	[1963, 720]
711	[855, 1276]	1808	[2643, 2644]	2905	[1732, 821]	4002	[1858, 2144]
712	[1277, 1278]	1809	[2292, 2645]	2906	[3560, 1659]	4003	[4256, 1971]
713	[1279, 1280]	1810	[1123, 2646]	2907	[731, 3229]	4004	[2178, 3394]
714	[1281, 1282]	1811	[2647, 2324]	2908	[787, 1734]	4005	[752, 701]
715	[327, 1283]	1812	[2648, 2649]	2909	[3505, 1995]	4006	[4257, 1790]
716	[1284, 894]	1813	[2650, 2651]	2910	[2039, 2138]	4007	[4258, 654]
717	[1285, 941]	1814	[2652, 2653]	2911	[34, 1786]	4008	[2150, 132]
718	[1286, 1287]	1815	[2654, 2655]	2912	[828, 3559]	4009	[4250, 749]
719	[1288, 1289]	1816	[2656, 2657]	2913	[488, 2207]	4010	[3365, 3405]
720	[1290, 1291]	1817	[2658, 2659]	2914	[3561, 557]	4011	[829, 2000]
721	[1292, 433]	1818	[2660, 2661]	2915	[3231, 1629]	4012	[10, 628]
722	[898, 1293]	1819	[2662, 2663]	2916	[3386, 3339]	4013	[671, 3341]

723	[1294, 1295]	1820	[2664, 1015]	2917	[1895, 3562]	4014	[4259, 3528]
724	[1296, 1297]	1821	[2665, 2666]	2918	[3563, 592]	4015	[4204, 3326]
725	[1298, 323]	1822	[376, 2667]	2919	[3564, 3565]	4016	[1558, 237]
726	[452, 1299]	1823	[2668, 455]	2920	[3566, 40]	4017	[3217, 1551]
727	[1300, 1301]	1824	[2669, 2670]	2921	[3415, 3446]	4018	[3488, 1687]
728	[1036, 308]	1825	[1071, 2671]	2922	[3567, 168]	4019	[3293, 508]
729	[1302, 1303]	1826	[2672, 2673]	2923	[1886, 3568]	4020	[2005, 3181]
730	[1304, 863]	1827	[882, 1309]	2924	[3309, 556]	4021	[1931, 693]
731	[1305, 1306]	1828	[1023, 2674]	2925	[3569, 1730]	4022	[3575, 820]
732	[1307, 1038]	1829	[2675, 2676]	2926	[3570, 1618]	4023	[2015, 1560]
733	[1308, 1309]	1830	[2677, 2678]	2927	[1898, 3443]	4024	[1808, 1988]
734	[1310, 1311]	1831	[2679, 2680]	2928	[1895, 3571]	4025	[3418, 575]
735	[1312, 1313]	1832	[2681, 2682]	2929	[1578, 1846]	4026	[560, 4260]
736	[1314, 1315]	1833	[2640, 2683]	2930	[3572, 2103]	4027	[3594, 852]
737	[1316, 1156]	1834	[1170, 2684]	2931	[3413, 3573]	4028	[689, 1858]
738	[1317, 1318]	1835	[2685, 2686]	2932	[3574, 2189]	4029	[3521, 610]
739	[1319, 1320]	1836	[2687, 2688]	2933	[1894, 3407]	4030	[4261, 1820]
740	[884, 1321]	1837	[2689, 2690]	2934	[3575, 1732]	4031	[591, 3416]
741	[1322, 1323]	1838	[2691, 2692]	2935	[3360, 3463]	4032	[1980, 227]
742	[1324, 1325]	1839	[2693, 1185]	2936	[1753, 1914]	4033	[1604, 3481]
743	[1326, 1307]	1840	[2694, 2695]	2937	[1896, 2209]	4034	[4229, 1996]
744	[1327, 1328]	1841	[2696, 1507]	2938	[693, 1733]	4035	[3472, 2169]
745	[1329, 1330]	1842	[2697, 2698]	2939	[3511, 1900]	4036	[1948, 1593]
746	[1331, 1332]	1843	[2699, 1434]	2940	[3576, 1989]	4037	[160, 680]
747	[1333, 1334]	1844	[2700, 2317]	2941	[3577, 3578]	4038	[4191, 2203]
748	[1335, 1336]	1845	[2701, 2355]	2942	[3579, 783]	4039	[1783, 832]
749	[1337, 1338]	1846	[1413, 2554]	2943	[3322, 3430]	4040	[3310, 3207]
750	[1339, 1340]	1847	[2702, 1044]	2944	[3491, 2131]	4041	[4262, 4213]
751	[1341, 1162]	1848	[2703, 2704]	2945	[2140, 3394]	4042	[1, 163]
752	[1342, 1343]	1849	[2705, 923]	2946	[3551, 3580]	4043	[4219, 501]
753	[1344, 1345]	1850	[2706, 2707]	2947	[2180, 1716]	4044	[2135, 695]
754	[1346, 1206]	1851	[2290, 2708]	2948	[3392, 3253]	4045	[3597, 3608]
755	[1347, 1348]	1852	[2709, 2710]	2949	[1908, 218]	4046	[2092, 581]
756	[1349, 406]	1853	[1470, 1201]	2950	[3447, 3581]	4047	[3639, 790]
757	[1350, 1351]	1854	[374, 2711]	2951	[3456, 687]	4048	[3406, 2089]
758	[1352, 1353]	1855	[2712, 1418]	2952	[3480, 2131]	4049	[1585, 1546]
759	[1354, 1355]	1856	[2713, 960]	2953	[1676, 852]	4050	[664, 128]
760	[1356, 1357]	1857	[2714, 2715]	2954	[3523, 848]	4051	[4199, 2066]
761	[1358, 1359]	1858	[2716, 2717]	2955	[3582, 3190]	4052	[511, 3581]
762	[1360, 1361]	1859	[2718, 2719]	2956	[2123, 611]	4053	[4253, 1590]
763	[1362, 1170]	1860	[2720, 2721]	2957	[2163, 3583]	4054	[1917, 237]
764	[1363, 902]	1861	[392, 2722]	2958	[1730, 2012]	4055	[3602, 1872]
765	[889, 1364]	1862	[2723, 2724]	2959	[3584, 3287]	4056	[4249, 1519]
766	[1365, 1366]	1863	[2725, 2679]	2960	[3525, 729]	4057	[2200, 1562]

767	[1367, 1368]	1864	[2726, 2727]	2961	[669, 3585]	4058	[3647, 3306]
768	[1369, 1312]	1865	[2728, 2729]	2962	[3243, 562]	4059	[2206, 1642]
769	[1370, 1371]	1866	[2730, 2731]	2963	[3569, 648]	4060	[2104, 2089]
770	[1372, 1373]	1867	[1041, 1176]	2964	[3194, 1600]	4061	[4233, 797]
771	[1303, 1374]	1868	[2732, 2431]	2965	[794, 1620]	4062	[2002, 532]
772	[1375, 1376]	1869	[82, 2733]	2966	[3586, 3449]	4063	[4263, 227]
773	[1377, 1378]	1870	[2734, 2283]	2967	[2109, 516]	4064	[4217, 789]
774	[1379, 1380]	1871	[2735, 2719]	2968	[1713, 3380]	4065	[4264, 1575]
775	[1381, 109]	1872	[2736, 2737]	2969	[3587, 1866]	4066	[3175, 43]
776	[1382, 1383]	1873	[360, 2738]	2970	[3588, 2018]	4067	[3207, 3297]
777	[1384, 1048]	1874	[2739, 2740]	2971	[2094, 582]	4068	[4265, 2037]
778	[1385, 1386]	1875	[2741, 2742]	2972	[3589, 1635]	4069	[636, 2017]
779	[1387, 1388]	1876	[2743, 2744]	2973	[3590, 3474]	4070	[3639, 798]
780	[1389, 97]	1877	[2745, 2746]	2974	[2021, 1558]	4071	[3221, 1924]
781	[1390, 1158]	1878	[2747, 1391]	2975	[2007, 155]	4072	[3482, 848]
782	[1391, 1008]	1879	[938, 1430]	2976	[674, 1933]	4073	[3601, 1893]
783	[1392, 1393]	1880	[2748, 2749]	2977	[1775, 3198]	4074	[4194, 828]
784	[1394, 1395]	1881	[2750, 2751]	2978	[3579, 698]	4075	[10, 3404]
785	[1396, 1397]	1882	[2752, 2753]	2979	[3591, 1993]	4076	[3624, 707]
786	[1398, 1399]	1883	[2651, 2754]	2980	[3592, 1937]	4077	[3631, 4210]
787	[1242, 1400]	1884	[2755, 997]	2981	[3156, 1633]	4078	[3473, 4266]
788	[1401, 1402]	1885	[2756, 2267]	2982	[3362, 1950]	4079	[4213, 3585]
789	[1403, 1404]	1886	[2757, 2591]	2983	[2181, 3552]	4080	[1801, 2075]
790	[1405, 1108]	1887	[2758, 2759]	2984	[3593, 3508]	4081	[149, 3554]
791	[1193, 1406]	1888	[2760, 908]	2985	[3236, 50]	4082	[2065, 1562]
792	[1407, 1408]	1889	[2761, 1100]	2986	[57, 3311]	4083	[3414, 480]
793	[1409, 1272]	1890	[2762, 2763]	2987	[839, 1866]	4084	[840, 1833]
794	[1045, 1167]	1891	[2764, 375]	2988	[3594, 1677]	4085	[3292, 708]
795	[1410, 1411]	1892	[2765, 20]	2989	[3589, 1999]	4086	[3630, 3189]
796	[1412, 1413]	1893	[2766, 2767]	2990	[3586, 3595]	4087	[2004, 622]
797	[1414, 1415]	1894	[2768, 2769]	2991	[3596, 566]	4088	[1515, 1582]
798	[1416, 1388]	1895	[2770, 2771]	2992	[3597, 1806]	4089	[4267, 1515]
799	[1417, 1269]	1896	[2733, 2772]	2993	[2192, 3157]	4090	[4268, 554]
800	[1418, 1419]	1897	[2773, 2774]	2994	[3263, 167]	4091	[217, 1801]
801	[1420, 1421]	1898	[2775, 2776]	2995	[3598, 2197]	4092	[4246, 2066]
802	[1422, 1423]	1899	[1100, 2777]	2996	[3599, 3546]	4093	[1999, 3483]
803	[1424, 1425]	1900	[364, 2778]	2997	[246, 1589]	4094	[1801, 844]
804	[1426, 328]	1901	[2779, 1201]	2998	[1968, 1994]	4095	[547, 842]
805	[1427, 1428]	1902	[1332, 2780]	2999	[3600, 710]	4096	[3367, 1614]
806	[1429, 1430]	1903	[321, 303]	3000	[607, 632]	4097	[1540, 733]
807	[1431, 1432]	1904	[2781, 425]	3001	[3533, 1647]	4098	[3613, 1839]
808	[1433, 1434]	1905	[2782, 2783]	3002	[3203, 2050]	4099	[1897, 9]
809	[1435, 1436]	1906	[2784, 2785]	3003	[3359, 1995]	4100	[4234, 1536]
810	[1437, 1438]	1907	[936, 1351]	3004	[3204, 1994]	4101	[1696, 2129]

811	[1439, 1440]	1908	[2786, 2787]	3005	[3294, 2051]	4102	[610, 226]
812	[1441, 1442]	1909	[2610, 2788]	3006	[205, 1577]	4103	[4247, 3453]
813	[1443, 1313]	1910	[2789, 1416]	3007	[1961, 3369]	4104	[12, 166]
814	[1444, 1445]	1911	[2790, 2791]	3008	[2202, 2168]	4105	[1668, 3626]
815	[1446, 1447]	1912	[2792, 2793]	3009	[3168, 1597]	4106	[3217, 705]
816	[1448, 1449]	1913	[2794, 1072]	3010	[1548, 2000]	4107	[529, 166]
817	[1450, 1451]	1914	[2788, 933]	3011	[3601, 1753]	4108	[721, 195]
818	[1452, 1453]	1915	[6, 2795]	3012	[3602, 245]	4109	[2102, 2199]
819	[1454, 1455]	1916	[2796, 2797]	3013	[1600, 2141]	4110	[535, 4269]
820	[1456, 1457]	1917	[2798, 305]	3014	[2036, 3369]	4111	[3340, 672]
821	[1458, 383]	1918	[2799, 2800]	3015	[2014, 793]	4112	[3302, 2163]
822	[1459, 1460]	1919	[2801, 2802]	3016	[1847, 604]	4113	[4189, 3364]
823	[1461, 1462]	1920	[2803, 2804]	3017	[3603, 3528]	4114	[750, 3283]
824	[1463, 1464]	1921	[2805, 64]	3018	[3545, 155]	4115	[4270, 4211]
825	[1465, 1466]	1922	[2806, 1254]	3019	[507, 239]	4116	[155, 2000]
826	[1467, 1468]	1923	[2807, 2808]	3020	[168, 1972]	4117	[4271, 1629]
827	[1469, 1470]	1924	[2809, 2810]	3021	[3604, 3605]	4118	[3644, 1571]
828	[1471, 1472]	1925	[2811, 2812]	3022	[3351, 499]	4119	[4254, 132]
829	[1473, 1474]	1926	[2813, 2423]	3023	[3489, 3465]	4120	[655, 3301]
830	[1475, 1159]	1927	[2814, 1041]	3024	[3193, 1926]	4121	[4272, 3399]
831	[1476, 1477]	1928	[2815, 2665]	3025	[3544, 705]	4122	[4273, 1610]
832	[384, 910]	1929	[2816, 2817]	3026	[1725, 1593]	4123	[1671, 1519]
833	[1478, 1479]	1930	[2818, 2819]	3027	[3431, 155]	4124	[3410, 3565]
834	[1480, 1481]	1931	[2820, 2821]	3028	[1936, 2156]	4125	[4256, 168]
835	[1482, 1483]	1932	[2822, 2823]	3029	[3606, 1522]	4126	[3558, 3421]
836	[1484, 1485]	1933	[2824, 2384]	3030	[3607, 3608]	4127	[3174, 606]
837	[1486, 1487]	1934	[2825, 910]	3031	[2052, 800]	4128	[4274, 1816]
838	[1488, 1489]	1935	[1404, 2826]	3032	[3609, 3610]	4129	[4215, 32]
839	[1490, 1491]	1936	[2827, 2828]	3033	[2046, 738]	4130	[3646, 1887]
840	[1492, 1493]	1937	[2829, 2772]	3034	[203, 3611]	4131	[1674, 3278]
841	[1494, 990]	1938	[1097, 2830]	3035	[3496, 3237]	4132	[3308, 3417]
842	[1495, 1496]	1939	[2831, 2615]	3036	[3612, 3424]	4133	[1731, 820]
843	[1497, 1040]	1940	[2832, 2833]	3037	[3613, 3189]	4134	[4239, 3200]
844	[419, 1498]	1941	[2834, 66]	3038	[688, 1626]	4135	[1735, 1669]
845	[1499, 1500]	1942	[2835, 1279]	3039	[3557, 577]	4136	[3572, 2199]
846	[1501, 1502]	1943	[2836, 2837]	3040	[159, 544]	4137	[757, 1642]
847	[1503, 1504]	1944	[24, 2473]	3041	[3538, 704]	4138	[4275, 219]
848	[1505, 1098]	1945	[2487, 900]	3042	[1741, 562]	4139	[3470, 1924]
849	[1506, 1507]	1946	[2838, 2309]	3043	[3614, 3166]	4140	[4220, 3353]
850	[1280, 1508]	1947	[2839, 2840]	3044	[3596, 1942]	4141	[4276, 740]
851	[1509, 1510]	1948	[2841, 2435]	3045	[3615, 3616]	4142	[3593, 660]
852	[1511, 69]	1949	[993, 2842]	3046	[586, 2201]	4143	[1850, 652]
853	[1512, 1513]	1950	[2721, 2843]	3047	[3614, 3377]	4144	[528, 12]
854	[1514, 1515]	1951	[317, 2844]	3048	[2148, 2088]	4145	[810, 1947]

855	[1516, 1517]	1952	[901, 1424]	3049	[3277, 224]	4146	[4251, 2159]
856	[1518, 1519]	1953	[2845, 886]	3050	[1746, 3362]	4147	[2084, 3315]
857	[1520, 482]	1954	[293, 2846]	3051	[3534, 3495]	4148	[3192, 2087]
858	[1521, 1522]	1955	[2847, 2364]	3052	[3397, 216]	4149	[2056, 2058]
859	[1523, 1524]	1956	[2848, 2849]	3053	[1654, 3227]	4150	[4277, 1753]
860	[1525, 1526]	1957	[2850, 2552]	3054	[3617, 62]	4151	[3600, 476]
861	[1527, 1528]	1958	[2851, 2852]	3055	[614, 687]	4152	[4264, 136]
862	[593, 1529]	1959	[2853, 2854]	3056	[3345, 3438]	4153	[4274, 1961]
863	[1530, 1531]	1960	[2855, 407]	3057	[52, 3618]	4154	[3349, 41]
864	[500, 1532]	1961	[2856, 2409]	3058	[3619, 1563]	4155	[1765, 789]
865	[612, 850]	1962	[2857, 2311]	3059	[3226, 525]	4156	[3643, 1576]
866	[191, 1533]	1963	[2858, 2246]	3060	[3285, 850]	4157	[4278, 605]
867	[1534, 1535]	1964	[2859, 2240]	3061	[3620, 3616]	4158	[205, 189]
868	[1536, 1537]	1965	[2860, 2861]	3062	[3621, 2207]	4159	[4279, 634]
869	[1538, 2]	1966	[2367, 1019]	3063	[59, 2144]	4160	[3492, 1629]
870	[1539, 760]	1967	[2862, 2863]	3064	[3622, 1656]	4161	[3552, 3306]
871	[1540, 801]	1968	[2864, 2345]	3065	[3524, 1787]	4162	[1909, 1576]
872	[1541, 1542]	1969	[2865, 1178]	3066	[3623, 180]	4163	[4268, 2072]
873	[1543, 494]	1970	[2866, 2634]	3067	[3402, 747]	4164	[3590, 4266]
874	[1544, 1545]	1971	[2867, 2868]	3068	[3624, 709]	4165	[213, 1920]
875	[1546, 1547]	1972	[2869, 2870]	3069	[3271, 3325]	4166	[4196, 2185]
876	[1548, 1549]	1973	[2871, 2872]	3070	[1813, 3478]	4167	[4280, 1861]
877	[1550, 1551]	1974	[2873, 2874]	3071	[38, 517]	4168	[2135, 3206]
878	[1552, 1553]	1975	[2875, 930]	3072	[2112, 2134]	4169	[4275, 1719]
879	[1554, 54]	1976	[2876, 2877]	3073	[1890, 1545]	4170	[3353, 140]
880	[1555, 137]	1977	[2878, 2879]	3074	[3407, 3571]	4171	[4281, 613]
881	[1556, 1557]	1978	[2880, 2881]	3075	[1975, 800]	4172	[1997, 2017]
882	[540, 1558]	1979	[2882, 2883]	3076	[2163, 3223]	4173	[2051, 1975]
883	[1559, 1560]	1980	[2884, 2639]	3077	[3625, 1988]	4174	[3448, 3595]
884	[798, 1561]	1981	[939, 2885]	3078	[3337, 3626]	4175	[537, 1894]
885	[1562, 1563]	1982	[2886, 2887]	3079	[3343, 1809]	4176	[2133, 8]
886	[1564, 14]	1983	[1325, 2363]	3080	[3627, 1643]	4177	[2078, 759]
887	[1565, 1566]	1984	[2749, 2888]	3081	[3513, 537]	4178	[4188, 2081]
888	[1567, 1568]	1985	[2889, 2890]	3082	[3501, 789]	4179	[3469, 1553]
889	[1569, 546]	1986	[2891, 281]	3083	[3206, 1990]	4180	[3220, 38]
890	[782, 698]	1987	[2892, 2346]	3084	[3503, 1739]	4181	[3560, 1593]
891	[1570, 1571]	1988	[1102, 2893]	3085	[3247, 3628]	4182	[3552, 3438]
892	[1572, 1573]	1989	[2894, 2895]	3086	[1906, 1902]	4183	[3619, 3338]
893	[1574, 188]	1990	[2810, 2896]	3087	[3320, 3532]	4184	[3566, 823]
894	[1575, 1576]	1991	[2897, 856]	3088	[3629, 1579]	4185	[4267, 32]
895	[1573, 42]	1992	[2898, 2899]	3089	[3370, 674]	4186	[4282, 88]
896	[188, 1577]	1993	[2629, 2900]	3090	[1538, 2058]	4187	[4283, 4284]
897	[1578, 238]	1994	[2901, 2902]	3091	[2116, 3498]	4188	[4285, 2246]
898	[137, 1579]	1995	[2903, 946]	3092	[725, 582]	4189	[4286, 2214]

899	[1580, 620]	1996	[2904, 2905]	3093	[221, 600]	4190	[4287, 4288]
900	[1581, 820]	1997	[2906, 2391]	3094	[3171, 481]	4191	[3685, 349]
901	[32, 1582]	1998	[2907, 2908]	3095	[3630, 1839]	4192	[2559, 1307]
902	[1564, 1583]	1999	[2909, 2910]	3096	[2069, 641]	4193	[1466, 2557]
903	[1584, 1585]	2000	[2911, 2912]	3097	[3631, 62]	4194	[4289, 4087]
904	[1586, 1587]	2001	[1474, 2319]	3098	[3528, 3632]	4195	[4290, 1114]
905	[1588, 1589]	2002	[2913, 2644]	3099	[1884, 640]	4196	[3749, 388]
906	[35, 1590]	2003	[2914, 1256]	3100	[1599, 3195]	4197	[4291, 4179]
907	[1591, 610]	2004	[2915, 1336]	3101	[3633, 3166]	4198	[3797, 4292]
908	[621, 1592]	2005	[2916, 98]	3102	[693, 787]	4199	[4293, 2387]
909	[1593, 1594]	2006	[2843, 2917]	3103	[3634, 1937]	4200	[4294, 4295]
910	[519, 1595]	2007	[2918, 2791]	3104	[1853, 667]	4201	[4296, 2564]
911	[1596, 1597]	2008	[989, 1409]	3105	[3635, 669]	4202	[4297, 1397]
912	[1598, 47]	2009	[2868, 2919]	3106	[1848, 3636]	4203	[4298, 1042]
913	[1599, 1600]	2010	[2920, 2921]	3107	[2207, 1708]	4204	[4299, 2742]
914	[760, 640]	2011	[2922, 1330]	3108	[3637, 720]	4205	[4300, 999]
915	[1557, 1601]	2012	[1167, 2923]	3109	[2129, 3251]	4206	[4301, 4028]
916	[1602, 231]	2013	[2924, 2626]	3110	[1981, 143]	4207	[4302, 1226]
917	[1603, 1604]	2014	[2925, 2926]	3111	[1985, 1867]	4208	[4303, 4304]
918	[1605, 620]	2015	[909, 2740]	3112	[3638, 1785]	4209	[4305, 2575]
919	[1606, 1607]	2016	[2927, 2928]	3113	[587, 3201]	4210	[4306, 2960]
920	[1608, 1609]	2017	[2214, 2929]	3114	[1586, 3578]	4211	[442, 4307]
921	[625, 1610]	2018	[1145, 277]	3115	[3541, 3639]	4212	[4021, 4308]
922	[667, 1611]	2019	[2930, 2902]	3116	[2160, 3640]	4213	[4309, 2251]
923	[1612, 1613]	2020	[1081, 2931]	3117	[3641, 2029]	4214	[4310, 998]
924	[735, 1614]	2021	[2932, 2933]	3118	[3342, 2037]	4215	[4311, 2276]
925	[1615, 1616]	2022	[313, 368]	3119	[3642, 2000]	4216	[1163, 23]
926	[1598, 781]	2023	[2934, 956]	3120	[3195, 3394]	4217	[997, 4312]
927	[1617, 1618]	2024	[2935, 2861]	3121	[3643, 1663]	4218	[1472, 2583]
928	[1619, 1620]	2025	[2887, 1282]	3122	[3644, 2039]	4219	[4313, 4314]
929	[1621, 580]	2026	[2936, 315]	3123	[3282, 751]	4220	[4315, 273]
930	[1622, 1623]	2027	[2937, 1512]	3124	[1777, 212]	4221	[4316, 1384]
931	[151, 151]	2028	[2874, 2938]	3125	[1906, 3475]	4222	[309, 4317]
932	[580, 555]	2029	[2939, 2940]	3126	[3290, 2004]	4223	[4318, 350]
933	[1624, 1625]	2030	[2631, 1465]	3127	[3645, 476]	4224	[4319, 1357]
934	[1626, 1627]	2031	[2941, 287]	3128	[3646, 194]	4225	[4320, 2884]
935	[1628, 621]	2032	[2942, 2773]	3129	[3647, 3438]	4226	[4321, 2257]
936	[815, 539]	2033	[2943, 2944]	3130	[1764, 1761]	4227	[3142, 4322]
937	[1629, 1630]	2034	[2945, 2946]	3131	[3350, 1908]	4228	[2635, 4323]
938	[1631, 1632]	2035	[2947, 2948]	3132	[3648, 1806]	4229	[4324, 1267]
939	[1633, 598]	2036	[1315, 878]	3133	[546, 481]	4230	[4325, 461]
940	[1634, 209]	2037	[2548, 2949]	3134	[2127, 196]	4231	[1181, 4326]
941	[1635, 1636]	2038	[2673, 2950]	3135	[3627, 1708]	4232	[4327, 1306]
942	[1637, 1638]	2039	[2951, 1002]	3136	[2081, 3328]	4233	[4328, 3763]

943	[1639, 1640]	2040	[2952, 344]	3137	[3347, 2014]	4234	[4329, 2466]
944	[1641, 778]	2041	[2953, 2685]	3138	[3649, 1808]	4235	[4330, 4331]
945	[1642, 1643]	2042	[2954, 2687]	3139	[3650, 1724]	4236	[2230, 4332]
946	[1644, 1645]	2043	[2955, 1372]	3140	[1774, 2194]	4237	[1115, 3797]
947	[613, 1528]	2044	[2956, 2702]	3141	[3577, 1587]	4238	[4333, 4334]
948	[1646, 1647]	2045	[911, 2534]	3142	[3177, 676]	4239	[4335, 1283]
949	[1648, 783]	2046	[2797, 2957]	3143	[127, 623]	4240	[3679, 1158]
950	[1649, 1650]	2047	[1095, 2958]	3144	[2108, 1517]	4241	[4336, 3832]
951	[1651, 1652]	2048	[2812, 2959]	3145	[142, 1982]	4242	[4337, 1405]
952	[1653, 58]	2049	[2960, 2961]	3146	[3457, 693]	4243	[2740, 1218]
953	[1654, 1655]	2050	[2962, 2694]	3147	[3576, 745]	4244	[4338, 2788]
954	[1525, 1656]	2051	[2963, 2964]	3148	[1820, 3400]	4245	[3933, 3802]
955	[1518, 1657]	2052	[2965, 2500]	3149	[3395, 562]	4246	[4339, 3794]
956	[1573, 1658]	2053	[2966, 1196]	3150	[3273, 3334]	4247	[3791, 1395]
957	[129, 478]	2054	[2967, 2968]	3151	[3651, 682]	4248	[4340, 286]
958	[1659, 1660]	2055	[2969, 2651]	3152	[678, 1712]	4249	[2695, 2810]
959	[1661, 40]	2056	[2970, 2901]	3153	[1709, 3358]	4250	[4341, 1115]
960	[787, 1662]	2057	[2971, 1214]	3154	[1711, 1812]	4251	[2611, 2776]
961	[136, 1663]	2058	[2972, 2973]	3155	[2110, 3580]	4252	[4342, 4343]
962	[1664, 1665]	2059	[2974, 2737]	3156	[3652, 2232]	4253	[4344, 911]
963	[781, 1666]	2060	[2975, 2976]	3157	[2606, 3653]	4254	[1003, 2345]
964	[1667, 1668]	2061	[2977, 1059]	3158	[873, 3654]	4255	[3958, 3691]
965	[1648, 698]	2062	[2978, 2407]	3159	[3655, 1488]	4256	[4345, 2869]
966	[1669, 1670]	2063	[2979, 1385]	3160	[3656, 3657]	4257	[4346, 426]
967	[1671, 1657]	2064	[2980, 978]	3161	[3658, 3659]	4258	[2247, 1415]
968	[1672, 1673]	2065	[2981, 2289]	3162	[3660, 3661]	4259	[1066, 4347]
969	[1674, 658]	2066	[411, 2982]	3163	[3662, 2860]	4260	[1005, 4348]
970	[1675, 742]	2067	[2983, 2984]	3164	[3663, 3664]	4261	[4349, 4350]
971	[1676, 1677]	2068	[2985, 2986]	3165	[2329, 3665]	4262	[4351, 3086]
972	[534, 500]	2069	[2987, 2883]	3166	[3666, 2328]	4263	[4352, 2846]
973	[1678, 592]	2070	[2988, 2489]	3167	[1021, 294]	4264	[4353, 2396]
974	[1679, 720]	2071	[2989, 2990]	3168	[3667, 2911]	4265	[4354, 2435]
975	[1680, 591]	2072	[2501, 1270]	3169	[3024, 3668]	4266	[4355, 4356]
976	[1681, 1682]	2073	[2991, 2959]	3170	[3669, 996]	4267	[4357, 108]
977	[1683, 582]	2074	[2992, 1039]	3171	[3670, 867]	4268	[4358, 3773]
978	[1684, 1685]	2075	[2369, 2993]	3172	[3671, 3150]	4269	[897, 4359]
979	[577, 728]	2076	[2994, 2995]	3173	[3672, 3673]	4270	[3900, 1423]
980	[1686, 525]	2077	[2996, 2997]	3174	[2990, 3659]	4271	[1464, 28]
981	[1687, 1688]	2078	[2910, 2915]	3175	[3674, 89]	4272	[4360, 2665]
982	[1689, 196]	2079	[2253, 2998]	3176	[3675, 399]	4273	[382, 96]
983	[493, 1690]	2080	[2999, 1289]	3177	[3676, 2249]	4274	[4361, 2658]
984	[1691, 668]	2081	[3000, 2758]	3178	[3677, 3678]	4275	[4362, 3703]
985	[730, 479]	2082	[2772, 2496]	3179	[88, 3679]	4276	[4363, 1048]
986	[1612, 1692]	2083	[3001, 1128]	3180	[3680, 2444]	4277	[4364, 267]

987	[201, 770]	2084	[3002, 2915]	3181	[2295, 3681]	4278	[4365, 464]
988	[1693, 1694]	2085	[3003, 2316]	3182	[380, 3155]	4279	[958, 2285]
989	[1695, 554]	2086	[3004, 3005]	3183	[3682, 453]	4280	[3704, 317]
990	[677, 846]	2087	[1047, 3006]	3184	[3683, 1080]	4281	[4366, 2704]
991	[840, 602]	2088	[2717, 3007]	3185	[3684, 3685]	4282	[636, 1998]
992	[1696, 167]	2089	[3008, 2399]	3186	[3686, 3687]	4283	[3216, 3544]
993	[1697, 1698]	2090	[3009, 349]	3187	[1261, 2438]	4284	[3252, 3393]
994	[1699, 1700]	2091	[3010, 2690]	3188	[3688, 3145]	4285	[4367, 3189]
995	[1701, 1702]	2092	[3011, 1044]	3189	[3689, 3690]	4286	[4368, 1578]
996	[544, 832]	2093	[3012, 2252]	3190	[3691, 3692]	4287	[3444, 697]
997	[1595, 1703]	2094	[3013, 2492]	3191	[3693, 2769]	4288	[3650, 1649]
998	[1704, 578]	2095	[885, 262]	3192	[1060, 3663]	4289	[31, 1515]
999	[1705, 198]	2096	[3014, 1433]	3193	[3694, 3695]	4290	[4255, 46]
1000	[1706, 728]	2097	[2492, 3015]	3194	[3696, 3697]	4291	[4277, 1893]
1001	[1702, 1703]	2098	[3016, 67]	3195	[3698, 1399]	4292	[52, 3636]
1002	[835, 1707]	2099	[3017, 3018]	3196	[3699, 2901]	4293	[1524, 710]
1003	[1642, 1708]	2100	[3019, 2442]	3197	[2666, 457]	4294	[4203, 3307]
1004	[37, 516]	2101	[1445, 3020]	3198	[3049, 3700]	4295	[4221, 1880]
1005	[1709, 1710]	2102	[3021, 3022]	3199	[3701, 3702]	4296	[4368, 237]
1006	[136, 1576]	2103	[3023, 3024]	3200	[3703, 3704]	4297	[3516, 1633]
1007	[1711, 1712]	2104	[3025, 381]	3201	[3705, 3706]	4298	[2064, 1749]
1008	[1713, 1714]	2105	[3026, 1064]	3202	[3707, 2835]	4299	[4369, 219]
1009	[1715, 1716]	2106	[3027, 3028]	3203	[2385, 1250]	4300	[3648, 3608]
1010	[758, 1717]	2107	[356, 2442]	3204	[3708, 441]	4301	[3356, 3250]
1011	[1718, 1719]	2108	[3029, 1143]	3205	[3052, 3709]	4302	[4222, 1647]
1012	[704, 1566]	2109	[2307, 3030]	3206	[2808, 2603]	4303	[4218, 1664]
1013	[1720, 1721]	2110	[3031, 1310]	3207	[3710, 3711]	4304	[2068, 2139]
1014	[788, 1722]	2111	[3032, 3033]	3208	[3712, 3713]	4305	[3270, 2185]
1015	[39, 823]	2112	[3034, 3035]	3209	[3714, 3715]	4306	[4262, 669]
1016	[481, 1723]	2113	[3036, 1099]	3210	[3716, 3717]	4307	[566, 3366]
1017	[1724, 234]	2114	[3037, 3038]	3211	[1012, 3718]	4308	[3260, 4216]
1018	[1725, 1659]	2115	[3039, 3040]	3212	[3719, 3720]	4309	[4263, 2047]
1019	[1726, 194]	2116	[329, 1405]	3213	[3721, 3722]	4310	[1747, 1705]
1020	[1727, 212]	2117	[3041, 3042]	3214	[2373, 3723]	4311	[4370, 1839]
1021	[33, 559]	2118	[3043, 1221]	3215	[3724, 3725]	4312	[3324, 2147]
1022	[779, 1728]	2119	[3044, 3045]	3216	[3726, 1451]	4313	[3307, 2094]
1023	[1729, 1730]	2120	[3046, 2792]	3217	[3727, 2950]	4314	[2209, 9]
1024	[1731, 1732]	2121	[3047, 295]	3218	[3728, 3729]	4315	[4257, 172]
1025	[1733, 1734]	2122	[3048, 3049]	3219	[3730, 3731]	4316	[241, 606]
1026	[1735, 1664]	2123	[3050, 1287]	3220	[979, 928]	4317	[1784, 1694]
1027	[1736, 1629]	2124	[3051, 3052]	3221	[3732, 3733]	4318	[4223, 1702]
1028	[1737, 1709]	2125	[3053, 3054]	3222	[3734, 3735]	4319	[4214, 544]
1029	[1738, 1739]	2126	[3055, 944]	3223	[116, 3736]	4320	[4371, 652]
1030	[803, 1740]	2127	[3056, 2795]	3224	[3737, 1273]	4321	[4237, 1526]

1031	[1741, 1742]	2128	[3042, 1012]	3225	[3738, 3739]	4322	[841, 548]
1032	[1743, 1585]	2129	[26, 3057]	3226	[3740, 944]	4323	[676, 1994]
1033	[1744, 1745]	2130	[3058, 1416]	3227	[857, 3741]	4324	[3468, 1882]
1034	[1, 1746]	2131	[3059, 275]	3228	[331, 2647]	4325	[1701, 1595]
1035	[1747, 579]	2132	[3060, 3061]	3229	[3742, 3743]	4326	[1589, 41]
1036	[1705, 159]	2133	[3062, 331]	3230	[3744, 3120]	4327	[3567, 1971]
1037	[578, 1704]	2134	[3063, 3064]	3231	[3745, 2388]	4328	[2186, 168]
1038	[708, 707]	2135	[3065, 2454]	3232	[3746, 3747]	4329	[4281, 1633]
1039	[198, 580]	2136	[3066, 3067]	3233	[1504, 2453]	4330	[4271, 1763]
1040	[1623, 709]	2137	[3068, 3069]	3234	[3748, 3749]	4331	[4278, 785]
1041	[707, 1748]	2138	[3070, 3071]	3235	[3153, 3750]	4332	[232, 3556]
1042	[165, 1652]	2139	[3072, 2800]	3236	[1273, 71]	4333	[3161, 1624]
1043	[1749, 1750]	2140	[945, 2823]	3237	[3751, 3752]	4334	[1635, 3483]
1044	[1751, 1752]	2141	[3073, 3074]	3238	[3753, 2655]	4335	[4372, 486]
1045	[1753, 1542]	2142	[3075, 3076]	3239	[3754, 2876]	4336	[3454, 3605]
1046	[1574, 205]	2143	[3077, 1264]	3240	[3755, 3756]	4337	[4272, 1820]
1047	[1520, 1723]	2144	[2288, 3078]	3241	[3757, 334]	4338	[4373, 1624]
1048	[1754, 44]	2145	[3079, 1234]	3242	[3758, 2500]	4339	[4370, 3189]
1049	[1669, 1665]	2146	[3080, 2560]	3243	[3759, 1254]	4340	[4374, 1705]
1050	[163, 1755]	2147	[3081, 1063]	3244	[2461, 2971]	4341	[3625, 3532]
1051	[1756, 239]	2148	[3082, 3083]	3245	[3760, 2727]	4342	[3649, 1758]
1052	[1757, 1758]	2149	[3084, 1016]	3246	[3761, 3762]	4343	[3445, 235]
1053	[785, 242]	2150	[2870, 1216]	3247	[2581, 2503]	4344	[4371, 145]
1054	[1759, 480]	2151	[3085, 3086]	3248	[1276, 3763]	4345	[2158, 128]
1055	[822, 819]	2152	[3087, 68]	3249	[3764, 931]	4346	[4375, 1633]
1056	[1718, 219]	2153	[3088, 949]	3250	[249, 1220]	4347	[1604, 4228]
1057	[1760, 1761]	2154	[3089, 2975]	3251	[2473, 3765]	4348	[516, 667]
1058	[139, 694]	2155	[3090, 3091]	3252	[3766, 2293]	4349	[3161, 3421]
1059	[770, 1762]	2156	[3092, 3093]	3253	[3767, 2782]	4350	[3202, 565]
1060	[1763, 1630]	2157	[3094, 250]	3254	[3768, 3712]	4351	[4242, 3639]
1061	[1764, 1522]	2158	[3095, 1120]	3255	[2482, 280]	4352	[4206, 3325]
1062	[1765, 1722]	2159	[3096, 2974]	3256	[3769, 3770]	4353	[2175, 2051]
1063	[1766, 1767]	2160	[2719, 1500]	3257	[3771, 2382]	4354	[1946, 811]
1064	[537, 1768]	2161	[3097, 2805]	3258	[3772, 3773]	4355	[4276, 3416]
1065	[1769, 1770]	2162	[3018, 3098]	3259	[1291, 3774]	4356	[2182, 2033]
1066	[1771, 1730]	2163	[3099, 3100]	3260	[3775, 436]	4357	[1524, 476]
1067	[1772, 1758]	2164	[3101, 386]	3261	[3776, 366]	4358	[4248, 728]
1068	[1773, 1575]	2165	[424, 1366]	3262	[96, 3777]	4359	[180, 3321]
1069	[1774, 770]	2166	[2711, 3102]	3263	[3778, 1043]	4360	[4376, 2017]
1070	[1775, 1776]	2167	[3103, 311]	3264	[3779, 3780]	4361	[4192, 40]
1071	[682, 774]	2168	[3104, 3105]	3265	[3781, 1277]	4362	[4186, 705]
1072	[1777, 1778]	2169	[2715, 3106]	3266	[297, 3782]	4363	[4265, 699]
1073	[1779, 1768]	2170	[2678, 3107]	3267	[3783, 3784]	4364	[3364, 1998]
1074	[1780, 1781]	2171	[1198, 2479]	3268	[3785, 3786]	4365	[3479, 694]

1075	[1782, 802]	2172	[3108, 2308]	3269	[915, 3787]	4366	[1607, 3306]
1076	[1783, 555]	2173	[1388, 3109]	3270	[3788, 3786]	4367	[4377, 3691]
1077	[1784, 1785]	2174	[3110, 1110]	3271	[3692, 273]	4368	[4378, 1413]
1078	[559, 1786]	2175	[3111, 3112]	3272	[3789, 1312]	4369	[4379, 2450]
1079	[1787, 1788]	2176	[3113, 2482]	3273	[3790, 3791]	4370	[4380, 92]
1080	[1789, 1535]	2177	[3114, 3115]	3274	[3792, 3793]	4371	[4381, 97]
1081	[1790, 173]	2178	[2313, 1244]	3275	[1208, 3794]	4372	[2497, 1362]
1082	[509, 1791]	2179	[3116, 3117]	3276	[3795, 915]	4373	[4382, 1085]
1083	[1792, 639]	2180	[3118, 3106]	3277	[3796, 3797]	4374	[4383, 3685]
1084	[513, 1778]	2181	[3119, 3120]	3278	[1278, 3798]	4375	[4384, 106]
1085	[1516, 1793]	2182	[3121, 3122]	3279	[3799, 293]	4376	[4385, 2678]
1086	[1794, 1795]	2183	[3123, 3124]	3280	[3800, 3801]	4377	[4373, 3421]
1087	[792, 1796]	2184	[2863, 3125]	3281	[3802, 3803]	4378	[3592, 564]
1088	[1797, 521]	2185	[3126, 1288]	3282	[2263, 2260]	4379	[1607, 3438]
1089	[1798, 1799]	2186	[3127, 3128]	3283	[3804, 3805]	4380	[3364, 2017]
1090	[1800, 1801]	2187	[1336, 937]	3284	[3806, 3807]	4381	[3582, 1840]
1091	[1802, 1803]	2188	[3129, 887]	3285	[3808, 1275]	4382	[475, 710]
1092	[1804, 151]	2189	[3130, 3131]	3286	[3809, 3810]	4383	[4374, 579]
1093	[1805, 1806]	2190	[3132, 1704]	3287	[3811, 3812]	4384	[3371, 682]
1094	[647, 1730]	2191	[1364, 3133]	3288	[3813, 897]	4385	[757, 2207]
1095	[1807, 485]	2192	[3134, 1362]	3289	[1053, 3814]		
1096	[1757, 1808]	2193	[3135, 2808]	3290	[1359, 2328]		

Output function $n \mapsto \tau(n)$:

n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$	n	$\tau(n)$
0	0	732	1	1464	1	2196	1	2928	1	3660	0
1	0	733	1	1465	1	2197	0	2929	1	3661	1
2	0	734	0	1466	0	2198	1	2930	0	3662	0
3	0	735	1	1467	0	2199	1	2931	0	3663	0
4	0	736	0	1468	0	2200	0	2932	1	3664	0
5	0	737	0	1469	0	2201	0	2933	1	3665	1
6	0	738	1	1470	0	2202	1	2934	0	3666	1
7	0	739	0	1471	0	2203	1	2935	0	3667	1
8	1	740	0	1472	1	2204	0	2936	1	3668	0
9	0	741	0	1473	0	2205	0	2937	0	3669	1
10	1	742	1	1474	1	2206	1	2938	0	3670	0
11	0	743	1	1475	1	2207	1	2939	0	3671	1
12	0	744	0	1476	0	2208	0	2940	0	3672	0
13	0	745	0	1477	0	2209	0	2941	1	3673	0
14	1	746	1	1478	1	2210	0	2942	0	3674	0
15	0	747	0	1479	0	2211	0	2943	1	3675	0
16	0	748	1	1480	0	2212	0	2944	1	3676	1
17	1	749	1	1481	0	2213	1	2945	0	3677	0
18	0	750	0	1482	0	2214	1	2946	0	3678	1

19	0	751	0	1483	0	2215	1	2947	0	3679	0
20	1	752	1	1484	0	2216	1	2948	0	3680	0
21	1	753	1	1485	0	2217	1	2949	1	3681	1
22	0	754	0	1486	0	2218	1	2950	1	3682	0
23	0	755	0	1487	0	2219	0	2951	1	3683	0
24	0	756	0	1488	1	2220	1	2952	1	3684	0
25	0	757	0	1489	0	2221	1	2953	0	3685	0
26	0	758	0	1490	1	2222	1	2954	0	3686	1
27	0	759	1	1491	1	2223	1	2955	1	3687	0
28	1	760	1	1492	0	2224	0	2956	1	3688	1
29	1	761	1	1493	0	2225	1	2957	0	3689	0
30	1	762	0	1494	1	2226	1	2958	1	3690	0
31	0	763	1	1495	0	2227	0	2959	1	3691	1
32	1	764	1	1496	1	2228	0	2960	0	3692	1
33	0	765	0	1497	1	2229	0	2961	1	3693	0
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35	1	767	0	1499	1	2231	1	2963	1	3695	1
36	0	768	0	1500	1	2232	0	2964	0	3696	0
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39	0	771	1	1503	0	2235	1	2967	1	3699	0
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43	1	775	1	1507	1	2239	0	2971	1	3703	0
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45	0	777	0	1509	1	2241	0	2973	0	3705	1
46	1	778	1	1510	1	2242	0	2974	1	3706	0
47	0	779	1	1511	1	2243	1	2975	1	3707	0
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49	0	781	1	1513	0	2245	1	2977	0	3709	0
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55	0	787	1	1519	1	2251	0	2983	0	3715	0
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67	0	799	1	1531	0	2263	1	2995	0	3727	1
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75	0	807	1	1539	1	2271	0	3003	0	3735	1
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87	1	819	0	1551	0	2283	0	3015	1	3747	1
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308	1	1040	0	1772	0	2504	1	3236	1	3968	1
309	1	1041	0	1773	1	2505	1	3237	0	3969	1
310	0	1042	0	1774	0	2506	0	3238	0	3970	1
311	0	1043	1	1775	0	2507	1	3239	0	3971	0
312	0	1044	1	1776	1	2508	0	3240	0	3972	0
313	1	1045	1	1777	0	2509	1	3241	0	3973	1
314	0	1046	0	1778	0	2510	1	3242	0	3974	1
315	1	1047	0	1779	0	2511	0	3243	1	3975	1
316	0	1048	0	1780	0	2512	0	3244	0	3976	1
317	0	1049	0	1781	0	2513	1	3245	0	3977	1
318	1	1050	0	1782	0	2514	0	3246	1	3978	1
319	0	1051	1	1783	1	2515	0	3247	1	3979	1
320	0	1052	0	1784	1	2516	0	3248	0	3980	0
321	0	1053	0	1785	1	2517	0	3249	0	3981	1
322	1	1054	1	1786	0	2518	1	3250	1	3982	1
323	0	1055	0	1787	0	2519	0	3251	0	3983	1
324	1	1056	0	1788	0	2520	1	3252	1	3984	0
325	1	1057	1	1789	1	2521	0	3253	0	3985	1
326	1	1058	1	1790	0	2522	1	3254	0	3986	1

327	1	1059	0	1791	1	2523	1	3255	0	3987	0
328	0	1060	1	1792	1	2524	0	3256	1	3988	1
329	1	1061	0	1793	0	2525	1	3257	1	3989	1
330	1	1062	0	1794	0	2526	1	3258	0	3990	0
331	1	1063	0	1795	0	2527	1	3259	1	3991	1
332	0	1064	1	1796	0	2528	1	3260	1	3992	1
333	1	1065	1	1797	1	2529	0	3261	0	3993	1
334	1	1066	1	1798	1	2530	1	3262	0	3994	1
335	0	1067	0	1799	0	2531	1	3263	1	3995	0
336	1	1068	1	1800	1	2532	0	3264	0	3996	0
337	0	1069	0	1801	0	2533	1	3265	0	3997	1
338	1	1070	0	1802	0	2534	1	3266	0	3998	0
339	0	1071	0	1803	0	2535	0	3267	1	3999	1
340	0	1072	0	1804	1	2536	0	3268	1	4000	0
341	1	1073	0	1805	1	2537	0	3269	0	4001	1
342	0	1074	0	1806	0	2538	1	3270	0	4002	1
343	0	1075	0	1807	0	2539	0	3271	1	4003	0
344	0	1076	1	1808	0	2540	1	3272	1	4004	1
345	0	1077	1	1809	1	2541	0	3273	0	4005	1
346	0	1078	0	1810	1	2542	0	3274	1	4006	0
347	0	1079	0	1811	1	2543	0	3275	0	4007	0
348	0	1080	1	1812	0	2544	1	3276	0	4008	1
349	0	1081	0	1813	1	2545	1	3277	0	4009	0
350	1	1082	1	1814	0	2546	0	3278	1	4010	0
351	0	1083	1	1815	1	2547	1	3279	1	4011	0
352	1	1084	1	1816	0	2548	1	3280	1	4012	1
353	1	1085	1	1817	0	2549	0	3281	1	4013	1
354	1	1086	0	1818	0	2550	0	3282	1	4014	1
355	0	1087	0	1819	0	2551	1	3283	1	4015	1
356	1	1088	1	1820	1	2552	1	3284	1	4016	0
357	1	1089	1	1821	1	2553	1	3285	1	4017	1
358	1	1090	1	1822	0	2554	0	3286	0	4018	1
359	1	1091	0	1823	1	2555	0	3287	1	4019	0
360	1	1092	1	1824	1	2556	1	3288	1	4020	1
361	1	1093	1	1825	0	2557	0	3289	0	4021	1
362	1	1094	0	1826	1	2558	0	3290	0	4022	0
363	0	1095	0	1827	0	2559	0	3291	1	4023	0
364	0	1096	0	1828	0	2560	1	3292	1	4024	0
365	1	1097	0	1829	1	2561	1	3293	0	4025	0
366	1	1098	1	1830	1	2562	1	3294	0	4026	1
367	0	1099	1	1831	1	2563	1	3295	1	4027	1
368	0	1100	1	1832	1	2564	1	3296	0	4028	1
369	1	1101	1	1833	1	2565	1	3297	1	4029	0
370	0	1102	1	1834	1	2566	0	3298	0	4030	1

371	0	1103	1	1835	1	2567	1	3299	0	4031	1
372	1	1104	0	1836	1	2568	0	3300	0	4032	0
373	1	1105	1	1837	0	2569	1	3301	1	4033	1
374	0	1106	0	1838	0	2570	1	3302	1	4034	1
375	0	1107	0	1839	1	2571	0	3303	1	4035	1
376	0	1108	1	1840	0	2572	0	3304	1	4036	0
377	0	1109	1	1841	1	2573	1	3305	1	4037	0
378	0	1110	1	1842	1	2574	1	3306	0	4038	0
379	0	1111	0	1843	1	2575	1	3307	1	4039	1
380	1	1112	0	1844	0	2576	0	3308	1	4040	1
381	1	1113	0	1845	0	2577	1	3309	0	4041	0
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383	0	1115	1	1847	1	2579	1	3311	0	4043	1
384	1	1116	1	1848	0	2580	0	3312	0	4044	1
385	0	1117	1	1849	0	2581	1	3313	1	4045	0
386	0	1118	0	1850	0	2582	0	3314	0	4046	0
387	1	1119	1	1851	0	2583	0	3315	1	4047	0
388	1	1120	0	1852	1	2584	0	3316	1	4048	1
389	1	1121	1	1853	0	2585	1	3317	0	4049	0
390	1	1122	1	1854	0	2586	1	3318	1	4050	1
391	0	1123	1	1855	1	2587	1	3319	1	4051	1
392	1	1124	1	1856	0	2588	0	3320	1	4052	0
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394	1	1126	0	1858	1	2590	0	3322	1	4054	1
395	0	1127	1	1859	1	2591	0	3323	0	4055	0
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397	0	1129	0	1861	1	2593	1	3325	1	4057	0
398	1	1130	1	1862	0	2594	0	3326	1	4058	0
399	1	1131	0	1863	0	2595	1	3327	1	4059	1
400	1	1132	0	1864	1	2596	0	3328	0	4060	0
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402	1	1134	0	1866	1	2598	0	3330	1	4062	1
403	0	1135	0	1867	0	2599	0	3331	1	4063	0
404	0	1136	0	1868	0	2600	0	3332	0	4064	1
405	1	1137	0	1869	1	2601	0	3333	1	4065	1
406	0	1138	0	1870	0	2602	0	3334	0	4066	0
407	1	1139	0	1871	0	2603	0	3335	0	4067	0
408	1	1140	0	1872	0	2604	0	3336	0	4068	1
409	0	1141	1	1873	1	2605	0	3337	0	4069	0
410	1	1142	1	1874	1	2606	0	3338	0	4070	0
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412	0	1144	0	1876	0	2608	1	3340	0	4072	1
413	0	1145	1	1877	0	2609	1	3341	1	4073	0
414	1	1146	0	1878	1	2610	1	3342	0	4074	0

415	0	1147	0	1879	0	2611	0	3343	1	4075	1
416	1	1148	1	1880	0	2612	0	3344	1	4076	1
417	0	1149	1	1881	0	2613	0	3345	1	4077	0
418	0	1150	0	1882	0	2614	1	3346	0	4078	1
419	0	1151	0	1883	1	2615	1	3347	1	4079	0
420	1	1152	0	1884	0	2616	0	3348	0	4080	0
421	0	1153	0	1885	0	2617	1	3349	1	4081	0
422	0	1154	0	1886	0	2618	1	3350	0	4082	0
423	1	1155	0	1887	1	2619	1	3351	0	4083	0
424	1	1156	0	1888	0	2620	1	3352	0	4084	0
425	1	1157	1	1889	0	2621	0	3353	1	4085	1
426	0	1158	0	1890	1	2622	1	3354	0	4086	0
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428	0	1160	0	1892	1	2624	0	3356	0	4088	0
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430	1	1162	0	1894	1	2626	0	3358	0	4090	1
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435	1	1167	1	1899	1	2631	1	3363	0	4095	0
436	1	1168	0	1900	0	2632	0	3364	1	4096	0
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439	0	1171	1	1903	0	2635	1	3367	0	4099	1
440	0	1172	0	1904	1	2636	0	3368	0	4100	1
441	1	1173	1	1905	1	2637	0	3369	1	4101	0
442	1	1174	0	1906	0	2638	1	3370	0	4102	0
443	0	1175	0	1907	1	2639	0	3371	0	4103	0
444	0	1176	1	1908	1	2640	1	3372	0	4104	0
445	1	1177	1	1909	1	2641	0	3373	1	4105	1
446	0	1178	1	1910	0	2642	0	3374	0	4106	1
447	1	1179	1	1911	0	2643	0	3375	1	4107	1
448	0	1180	1	1912	0	2644	0	3376	1	4108	0
449	1	1181	1	1913	0	2645	1	3377	0	4109	1
450	1	1182	0	1914	1	2646	1	3378	1	4110	0
451	1	1183	1	1915	0	2647	1	3379	1	4111	0
452	0	1184	1	1916	1	2648	0	3380	1	4112	1
453	0	1185	0	1917	1	2649	1	3381	0	4113	0
454	1	1186	1	1918	1	2650	1	3382	0	4114	0
455	0	1187	1	1919	0	2651	1	3383	1	4115	1
456	0	1188	1	1920	1	2652	0	3384	0	4116	1
457	0	1189	0	1921	1	2653	1	3385	1	4117	1
458	0	1190	0	1922	0	2654	1	3386	1	4118	0

459	0	1191	0	1923	0	2655	1	3387	0	4119	0
460	1	1192	1	1924	0	2656	0	3388	1	4120	1
461	1	1193	0	1925	0	2657	1	3389	0	4121	0
462	1	1194	1	1926	1	2658	0	3390	1	4122	1
463	0	1195	1	1927	1	2659	0	3391	0	4123	0
464	1	1196	0	1928	1	2660	0	3392	0	4124	1
465	0	1197	1	1929	1	2661	1	3393	1	4125	0
466	0	1198	0	1930	1	2662	0	3394	0	4126	0
467	1	1199	1	1931	1	2663	0	3395	0	4127	0
468	1	1200	0	1932	1	2664	1	3396	0	4128	0
469	1	1201	0	1933	0	2665	1	3397	0	4129	1
470	1	1202	1	1934	0	2666	1	3398	1	4130	0
471	0	1203	1	1935	1	2667	0	3399	0	4131	0
472	0	1204	1	1936	1	2668	1	3400	0	4132	1
473	1	1205	0	1937	1	2669	1	3401	1	4133	1
474	0	1206	1	1938	0	2670	0	3402	0	4134	0
475	0	1207	0	1939	0	2671	1	3403	1	4135	0
476	1	1208	0	1940	1	2672	1	3404	1	4136	0
477	1	1209	1	1941	0	2673	0	3405	0	4137	0
478	0	1210	1	1942	1	2674	1	3406	1	4138	0
479	1	1211	0	1943	1	2675	1	3407	0	4139	0
480	1	1212	1	1944	0	2676	1	3408	0	4140	0
481	1	1213	0	1945	1	2677	1	3409	1	4141	1
482	0	1214	0	1946	1	2678	0	3410	1	4142	0
483	0	1215	0	1947	1	2679	1	3411	1	4143	0
484	1	1216	0	1948	0	2680	1	3412	0	4144	1
485	1	1217	0	1949	0	2681	1	3413	0	4145	0
486	0	1218	1	1950	1	2682	0	3414	0	4146	0
487	1	1219	1	1951	0	2683	0	3415	0	4147	0
488	1	1220	1	1952	1	2684	0	3416	1	4148	1
489	0	1221	0	1953	0	2685	1	3417	1	4149	1
490	1	1222	1	1954	1	2686	1	3418	0	4150	1
491	1	1223	1	1955	1	2687	1	3419	1	4151	0
492	0	1224	0	1956	1	2688	1	3420	1	4152	1
493	1	1225	0	1957	0	2689	0	3421	1	4153	0
494	1	1226	0	1958	0	2690	0	3422	1	4154	1
495	1	1227	0	1959	1	2691	0	3423	0	4155	0
496	0	1228	1	1960	1	2692	1	3424	1	4156	0
497	1	1229	0	1961	1	2693	1	3425	1	4157	0
498	0	1230	0	1962	1	2694	0	3426	0	4158	1
499	0	1231	1	1963	1	2695	1	3427	1	4159	1
500	1	1232	0	1964	0	2696	1	3428	0	4160	0
501	0	1233	0	1965	1	2697	1	3429	1	4161	0
502	0	1234	1	1966	0	2698	1	3430	0	4162	1

503	1	1235	1	1967	1	2699	1	3431	1	4163	1
504	0	1236	1	1968	1	2700	0	3432	1	4164	0
505	1	1237	0	1969	0	2701	0	3433	0	4165	1
506	1	1238	1	1970	1	2702	1	3434	1	4166	0
507	0	1239	0	1971	0	2703	0	3435	0	4167	1
508	1	1240	0	1972	1	2704	1	3436	1	4168	1
509	1	1241	0	1973	1	2705	0	3437	1	4169	0
510	0	1242	1	1974	0	2706	0	3438	1	4170	1
511	0	1243	0	1975	0	2707	0	3439	1	4171	1
512	1	1244	0	1976	0	2708	1	3440	0	4172	1
513	1	1245	0	1977	0	2709	1	3441	1	4173	1
514	1	1246	0	1978	1	2710	1	3442	1	4174	0
515	1	1247	0	1979	0	2711	1	3443	1	4175	1
516	1	1248	0	1980	0	2712	1	3444	0	4176	0
517	0	1249	0	1981	0	2713	0	3445	1	4177	1
518	1	1250	0	1982	0	2714	0	3446	1	4178	0
519	0	1251	0	1983	0	2715	1	3447	1	4179	1
520	0	1252	0	1984	1	2716	1	3448	0	4180	0
521	1	1253	0	1985	1	2717	0	3449	1	4181	1
522	0	1254	0	1986	0	2718	1	3450	0	4182	0
523	0	1255	1	1987	1	2719	0	3451	1	4183	1
524	0	1256	0	1988	1	2720	1	3452	1	4184	1
525	1	1257	0	1989	1	2721	1	3453	1	4185	1
526	1	1258	0	1990	1	2722	1	3454	0	4186	0
527	1	1259	1	1991	1	2723	0	3455	1	4187	1
528	1	1260	1	1992	1	2724	0	3456	1	4188	0
529	1	1261	0	1993	0	2725	0	3457	1	4189	0
530	0	1262	0	1994	1	2726	1	3458	0	4190	0
531	1	1263	1	1995	1	2727	0	3459	0	4191	0
532	1	1264	1	1996	1	2728	1	3460	1	4192	0
533	0	1265	1	1997	1	2729	0	3461	0	4193	0
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535	0	1267	1	1999	1	2731	0	3463	1	4195	1
536	1	1268	0	2000	1	2732	0	3464	1	4196	0
537	1	1269	1	2001	1	2733	0	3465	1	4197	1
538	0	1270	1	2002	1	2734	0	3466	1	4198	1
539	0	1271	1	2003	1	2735	0	3467	0	4199	1
540	0	1272	1	2004	0	2736	0	3468	1	4200	0
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542	1	1274	0	2006	0	2738	0	3470	0	4202	1
543	1	1275	0	2007	1	2739	1	3471	0	4203	0
544	1	1276	0	2008	0	2740	1	3472	1	4204	1
545	1	1277	0	2009	1	2741	0	3473	1	4205	1
546	0	1278	1	2010	1	2742	1	3474	0	4206	0

547	0	1279	1	2011	1	2743	0	3475	0	4207	1
548	1	1280	1	2012	1	2744	1	3476	0	4208	1
549	0	1281	1	2013	0	2745	0	3477	0	4209	0
550	0	1282	1	2014	1	2746	0	3478	1	4210	0
551	0	1283	1	2015	0	2747	1	3479	0	4211	1
552	0	1284	1	2016	1	2748	0	3480	1	4212	1
553	0	1285	1	2017	1	2749	1	3481	0	4213	0
554	1	1286	0	2018	1	2750	0	3482	1	4214	0
555	0	1287	1	2019	0	2751	0	3483	0	4215	1
556	1	1288	1	2020	0	2752	0	3484	0	4216	0
557	1	1289	0	2021	1	2753	1	3485	1	4217	1
558	0	1290	1	2022	1	2754	1	3486	0	4218	1
559	0	1291	1	2023	0	2755	0	3487	0	4219	1
560	1	1292	0	2024	0	2756	0	3488	1	4220	0
561	0	1293	0	2025	0	2757	0	3489	0	4221	1
562	1	1294	1	2026	1	2758	1	3490	0	4222	1
563	0	1295	1	2027	0	2759	0	3491	1	4223	1
564	0	1296	1	2028	0	2760	0	3492	0	4224	0
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566	0	1298	0	2030	1	2762	1	3494	1	4226	1
567	1	1299	1	2031	1	2763	0	3495	0	4227	1
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570	1	1302	0	2034	0	2766	0	3498	1	4230	0
571	0	1303	1	2035	0	2767	1	3499	0	4231	1
572	0	1304	0	2036	0	2768	1	3500	0	4232	1
573	0	1305	0	2037	1	2769	1	3501	0	4233	1
574	1	1306	0	2038	0	2770	1	3502	0	4234	1
575	1	1307	1	2039	1	2771	0	3503	1	4235	1
576	0	1308	1	2040	1	2772	1	3504	1	4236	1
577	0	1309	1	2041	0	2773	1	3505	1	4237	1
578	1	1310	0	2042	0	2774	1	3506	0	4238	1
579	1	1311	1	2043	1	2775	1	3507	1	4239	0
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581	0	1313	0	2045	0	2777	1	3509	1	4241	0
582	1	1314	0	2046	1	2778	0	3510	1	4242	0
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584	0	1316	0	2048	0	2780	0	3512	0	4244	0
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589	1	1321	0	2053	0	2785	0	3517	1	4249	1
590	1	1322	0	2054	1	2786	1	3518	1	4250	0

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729	0	1461	1	2193	1	2925	1	3657	1		
730	0	1462	1	2194	1	2926	0	3658	1		
731	0	1463	0	2195	1	2927	1	3659	0		

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