MA3413: Group Representations I
Tutorial questions, March 19, 2015

The main goal of this tutorial is to apply the general methods to compute the character table of S_6.

1. Fill in the following table, putting at the intersection of the row indexed by a partition λ and the column indexed by a partition μ, the character of $\mathbb{C}M_\lambda$ on the conjugacy class corresponding to the cycle type μ.

	1^6	21^4	2^21^2	31^3	2^3	321	33	41^2	42	51	6
1^6											
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42											
51											
6											

2. Recalling the dominance partial ordering on partitions (drawn below for your convenience), and the statement from class saying that S_μ occurs in $\mathbb{C}M_\mu$ only if $\lambda \trianglerighteq \mu$, figure out the characters of all the Specht modules S_μ. (*Hint*: subtract from the character of $\mathbb{C}M_\mu$ the characters of S_λ for $\lambda \triangleright \mu$, each with multiplicity equal to the actual multiplicity of S_λ in $\mathbb{C}M_\mu$).