REPRESENTATION THEORY, HINTS TO PSET 1

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Problem 1. Hint for 1) and 2): V is generated by one element.

Problem 2. Hints for 2): apply an element from the tensor product to various monomials and look at the top degree part of the result. It may be helpful to use the lexiographic order of monomials.

Problem 3. Hint for 3): what can you say about the quotients of $\mathcal{H}(d)$ generated by maximal ideals in $\mathbb{C}[X_1, \ldots, X_d]^{S_d}$?

Hint for 5): produce sufficiently many irreducible modules of dimension $n!$.

Problem 4. Hint for 2): One can transpose Young diagrams.