REPRESENTATION THEORY, HINTS TO PSET 5

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Problem 1. Consider compositions of inclusions $\iota_j : U_j \to U$ and projections $\pi_i' : U \to U_i'$. You may also want to prove the following fact: for an infinite field k and a k-algebra A and isomorphism $M \oplus N \cong M' \oplus N$ of finite dimensional A-modules, there is an isomorphism $M \cong M'$.

Problem 2. In b), view a representation of this quiver as a single $\mathbb{Z}/2\mathbb{Z}$-graded vector space with an operator of degree 1.

Problem 4. Consider the irreducible components of $\mu^{-1}(0)$, where $\mu : V \oplus V^* \to \mathfrak{g}^*$ is the moment map. What is their number, their dimensions?

Problem 5. Use that the roots for $\tilde{D}_4$ are of the form $\alpha + n\delta$, where $\alpha = 0$ or α is a root for D_4 and δ is the indecomposable imaginary root. Then apply the information about the irreducible representations of deformed preprojective algebras.