HW2

September 2020

1. Let $Q = (Q_0, Q_1, h, t)$ be a quiver with one vertex and one loop,
   i.e. $Q_0 = \{1\}$ and $Q_1 = \{a\}$ with $h(a) = 1 = t(a)$.

   (a) Prove that there is a bijection:

   $$\{\text{isomorphism classes of indecomposable } Q \text{ representations } V \text{ with } dim_{\mathbb{C}} V = n\}$$

   $$\longleftrightarrow$$

   $$\{\text{Jordan blocks of size } n\}$$

   (b) Prove that there is a bijection:

   $$\{\text{isomorphism classes of } Q \text{ representations } V \text{ with } dim_{\mathbb{C}} V = n\}$$

   $$\longleftrightarrow$$

   $$\{\text{Jordan normal forms of size } n, \text{ modulo order of Jordan blocks }\}$$