MATH 299Q: Homework 4 Solutions

Quiver Representations

1. (a) There are four total paths in Q; e_1, e_2, α, and β. Therefore all elements $x \in kQ$ are of the form
$$x = \lambda_1 e_1 + \lambda_2 e_2 + \mu_1 \alpha + \mu_2 \beta.$$
For $\lambda_i, \mu_i \in k$, hence $\dim kQ = 4$.

   (b) It should follow quite immediately that the only such $f \in \operatorname{End} M$ is a scalar multiple of the identity morphism id. Therefore, $\dim(\operatorname{End} kQ) = 1$.

2. We have;