8. Übungsaufgaben Darstellungstheorie II, SS 07

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1. Let A be a K-algebra. Recall that for an indecomposable A-module X, we define $F(X) := \mathrm{End}_A(X)/\operatorname{rad}(\mathrm{End}_A(X))$. Prove the following:

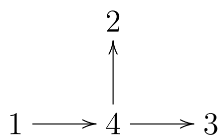
(i) If X is indecomposable and non-projective, then $F(X) \cong F(\tau(X))$;
(ii) Assume K is algebraically closed. If X is indecomposable, then $F(X) \cong K$.

2. Knit the preprojective components of (Γ_A, d_A) for the following algebras:

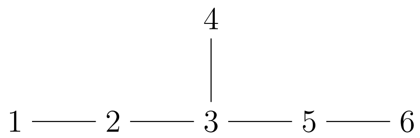
(i) The $\mathbb{R}$-algebra $\begin{pmatrix} \mathbb{R} & \mathbb{C} \\ 0 & \mathbb{R} \end{pmatrix}$

(In the following examples we consider the algebras to be defined over an arbitrary field K.)

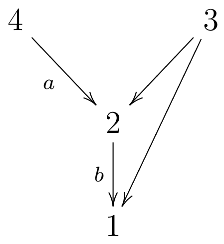
(ii) $A = KQ$ where Q is the quiver



(iii) $A = KQ$ for the quiver Q given by an orientation of your choice of the following diagram:

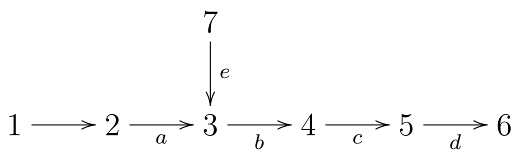


(iv) $A = KQ/I$ where Q is the quiver



and I is the ideal generated by the path ba;

(v) $A = KQ/I$ where Q is the quiver



and I is the ideal generated by cba and $dcbe$.