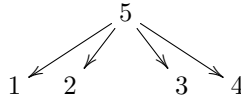**HW6**

Tuesday, November 10, 2020 - Due: Tuesday, November 17, 2020

1. Let Q be the quiver $1 \leftarrow 2$. Describe the Weyl group for Q.

2. Let Q be the quiver $1 \leftarrow 2 \leftarrow 3$

   (a) Find the matrix of the reflection s_1.

   (b) Find the matrix of the reflection s_2.

   (c) Find the matrix of the reflection s_3.

   (d) Find the matrix of the coxeter element $c = s_3 s_2 s_1$.

   (e) Find $c(\underline{dim}I_2)$.

   (f) Find $C^+(I_2)$.

3. Let Q be the following quiver.

   (a) Find a vector $\alpha \in \mathbb{Z}^5$ such that $q_Q(\alpha) = 0$, where q_Q is the associated Tits form.

   (b) Find the matrix for the Coxeter element c in the Weyl group associated to the admissible sequence $\{1, 2, 3, 4, 5\}$.

   (c) Find a vector $\underline{n} \in \mathbb{Z}^5$ such that $c(\underline{n}) = \underline{n}$.

   (d) Find the projective representation P_5.

   (e) Find $c(\underline{dim}(P_5))$.

   (f) Let C^+ be the Coxeter functor associated to the admissible sequence $\{1, 2, 3, 4, 5\}$.
       Find $C^+(P_5)$.

4. Let Q be the following quiver.
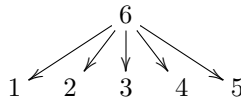
   Find a vector $\alpha \in \mathbb{Z}^6$ such that $q_Q(\alpha) < 0$, where q_Q is the associated Tits form.