Quiz 10

1. (5 points) Let W be the span of $\begin{pmatrix} 0 \\ 4 \\ 2 \end{pmatrix}$ and $\begin{pmatrix} 5 \\ 6 \\ -7 \end{pmatrix}$. Produce an orthogonal basis for W.

2. (5 points) Let V be the span of $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$. Write $T(\vec{x}) = \operatorname{proj}_V \vec{x}$ as a matrix transformation.

(For fun) Consider the transformation $T : V \to V$ defined by $T(f) = f''$, where V is the set of functions whose second derivatives are continuous. What are the eigenvectors of T?