Homework 7 - due Wednesday, August 9 at 10:00AM

Diagonalization and Orthogonal Projection Practice
Make sure to justify your solution for each problem.

1. Let $A = \begin{bmatrix} 2 & 3 \\ 0 & -1 \end{bmatrix}$. Diagonalize A, then find a formula for A^k.

2. Let $\mathbf{y} = \begin{bmatrix} 6 \\ 3 \\ -2 \end{bmatrix}$, $\mathbf{u_1} = \begin{bmatrix} 3 \\ 4 \\ 0 \end{bmatrix}$, and $\mathbf{u_2} = \begin{bmatrix} -4 \\ 3 \\ 0 \end{bmatrix}$.

   (a) Verify that $\{\mathbf{u_1}, \mathbf{u_2}\}$ is an orthogonal set.

   (b) Find the orthogonal projection of $\mathbf{y}$ onto $\mathrm{Span}\{\mathbf{u_1}, \mathbf{u_2}\}$.