

You have 20 minutes to complete this quiz. To receive full credit, you must justify your answers.

Name : _____

1. (5 points) Find an invertible matrix P such that $A = PDP^{-1}$, where

$$A = \begin{bmatrix} -2 & 0 & 2 \\ -8 & 2 & 4 \\ -4 & 0 & 4 \end{bmatrix} \text{ and } D = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 0 \end{bmatrix}.$$

2. (5 points) Determine if the following set of vectors is orthogonal:

$$\left\{ \begin{bmatrix} 2 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ 5 \end{bmatrix}, \begin{bmatrix} 4 \\ -2 \\ 0 \end{bmatrix} \right\}$$