Qiulin Fan Assignment readQ8-1 due 04/17/2024 at 08:01am EDT

ma217-w24

Problem 1. (1 point)

Which of the following matrices are orthogonally diagonalizable?

• A.
$$\begin{bmatrix} 3 & 3 & 4 \\ 3 & 3 & 5 \\ 3 & 3 & 0 \end{bmatrix}$$
• B.
$$\begin{bmatrix} 3 & 3 & 3 \\ 4 & 4 & 4 \\ 5 & 5 & 5 \end{bmatrix}$$
• C.
$$\begin{bmatrix} 3 & 3 & 3 \\ 3 & 4 & 4 \\ 3 & 4 & 5 \end{bmatrix}$$
• D.
$$\begin{bmatrix} 0 & 3 & 4 \\ 3 & 0 & 5 \\ 4 & 5 & 0 \end{bmatrix}$$

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Answer(s) submitted:

• CD

submitted: (correct)

recorded: (correct)

Problem 2. (1 point)

Consider the matrix $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$. Find an orthogonal S such that $S^{-1}AS = D$, a diagonal matrix.

$$S = \begin{bmatrix} - & - \\ - & - \end{bmatrix}$$

Answer(s) submitted:

$$\bullet \left[\begin{array}{cc} -\frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{array} \right]$$

submitted: (correct) recorded: (correct)

1