**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. $\begin{bmatrix} 0 & 3 & 4 \\ 3 & 0 & 5 \\ 4 & 5 & 0 \end{bmatrix}$

*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.

$S = \begin{bmatrix} \underline{\quad} & \underline{\quad} \\ \underline{\quad} & \underline{\quad} \end{bmatrix}$

*Answer(s) submitted:*

- $\begin{bmatrix} -\frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{bmatrix}$

submitted: (correct)
recorded: (correct)