

Name:

1. Find an orthogonal matrix  $P$  and a diagonal matrix  $D$  such that  $A = PDP^T$ .

$$A = \begin{pmatrix} -2 & 1 & -2 \\ 1 & -2 & -2 \\ -2 & -2 & 1 \end{pmatrix}$$

2. Solve the following initial value problem.

$$\begin{aligned}y'' - 4y' + 3y &= 0 \\y(0) &= 1 \\y'(0) &= 1\end{aligned}$$