

Name:

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

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

2. Solve the following initial value problem.

$$y'' - 2y' + y = 0$$

$$y(0) = 0$$

$$y'(0) = 1$$