Quiz 9

Name : _____

SID : _____

1. Consider the matrix A given by

$$\begin{bmatrix} 1 & -2 \\ 5 & -1 \end{bmatrix}.$$

Find a real matrix C of the form

$$\begin{bmatrix} a & -b \\ b & a \end{bmatrix}$$

which is similar to A. In other words, find such a real matrix C and an invertible matrix P such that $A = PCP^{-1}$ (or equivalently, $P^{-1}AP = C$, or $AP = PC$).

2. Check if

$$\begin{bmatrix} 1 \\ 0 \\ -1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 2 \\ -1 \\ 0 \end{bmatrix}$$

are orthogonal to each other.