Quiz 6

Name: _____ Score: _____

1. Find all the eigenvalues λ of the matrix A. You do not need to find eigenvectors.

$$A = \begin{bmatrix} 4 & -6 \\ 1 & -1 \end{bmatrix}$$

$\lambda =$ _____, _____.

2. Which of the vectors is an eigenvector of A? Circle your answer.

$$A = \begin{bmatrix} -1 & 1 \\ -12 & 6 \end{bmatrix}$$

(i) $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$ (ii) $\begin{bmatrix} 2 \\ 4 \end{bmatrix}$ (iii) $\begin{bmatrix} -1 \\ -1 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$

3. Find the change-of-basis matrix $\underset{C \leftarrow B}{P}$ that rewrites a vector $[\vec{x}]_B$ in B coordinates in terms of C coordinates $[\vec{x}]_C$:

$$B = \begin{bmatrix} -5 \\ -10 \end{bmatrix}, \qquad \begin{bmatrix} -3 \\ -7 \end{bmatrix},$$
$$C = \begin{bmatrix} 3 \\ 2 \end{bmatrix}, \qquad \begin{bmatrix} 1 \\ -1 \end{bmatrix}, \qquad .$$

$$\underset{C \leftarrow B}{P} = \begin{bmatrix} \_\_\_\_\_ & \_\_\_\_\_ \\ \_\_\_\_\_ & \_\_\_\_\_ \end{bmatrix}$$