QUIZ 6

NAME: _____

1.(2 points) True or False

(1) **T/F** $\lambda = 3$ is an eigenvalue of $\begin{bmatrix} 4 & 2 \\ 4 & 8 \end{bmatrix}$.

(2) **T/F** $\begin{bmatrix} 1 \\ -1 \\ 1 \end{bmatrix}$ is an eigenvalue of $\begin{bmatrix} 2 & 5 & 4 \\ 3 & 2 & 5 \\ 5 & 5 & 4 \end{bmatrix}$.

2.(2 points) Use the factorization $A = PDP^{-1}$ to compute A^k, where k represents an aribtrary positive integer.

$$\begin{bmatrix} a & 0 \\ 2(b-a) & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ -2 & 1 \end{bmatrix} \begin{bmatrix} a & 0 \\ 0 & b \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix}$$

3. Given a matrix $\begin{bmatrix} 4 & 1 \\ 1 & 2 \end{bmatrix}$.

(1) (1 point) find its the characteristic equation,

(2) (2 point) find all of its eigenvalues,

(3) (2 points) find a basis for each of its eigenspaces.