Thursday, March 3, 2022 5:14 PM

$$\begin{bmatrix} 9 & -2 \\ -2 & 6 \end{bmatrix}$$

$$\begin{vmatrix} 9-\lambda & -2 \\ -2 & 6-\lambda \end{vmatrix}$$

$$= (9-\lambda)(6-\lambda) - 4$$
$$= \lambda^2 - 15\lambda + 50$$
$$(\lambda-5)(\lambda-10) = 0$$
$$\lambda = 5$$
$$\lambda = 10$$

$$A - \lambda I = 0$$

$$\begin{bmatrix} 9-5 & -2 \\ -2 & 6-5 \end{bmatrix} = \underset{2\times 2}{\begin{bmatrix} 4 & -2 \\ -2 & 1 \end{bmatrix}} \underset{2\times 1}{\begin{bmatrix} x \\ y \end{bmatrix}}$$

$$\begin{bmatrix} 4x - 2y \\ -2x + y \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$4x = 2y \quad = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$
$$y = 2x$$

$$\begin{bmatrix} 9-10 & -2 \\ -2 & 6-10 \end{bmatrix} = \begin{bmatrix} -1 & -2 \\ -2 & -4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix}$$

$$\begin{bmatrix} -x - 2y \\ -2x - 4y \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} -2 \\ \end{bmatrix}$$

$X = -2y$ [illegible]

$R =$

$V^{1/2} \rho V^{1/2} = \Sigma$

$R = V^{-1/2} \Sigma V^{-1/2}$