Question: [Use row reduction to Solve]
$$2x_1 + 4x_2 + 6x_3 = 8$$

$$x_1 + 2x_2 + 4x_3 = 8$$

$$3x_1 + 6x_2 + 9x_3 = 12$$

Answer
$$\begin{bmatrix} 2x_{1}+4x_{2}+6x_{3} \end{bmatrix} = 8$$

$$\begin{bmatrix} x_1 & x_2 & x_3 \end{bmatrix} \begin{bmatrix} 2 \\ 4 \\ 6 \end{bmatrix} = 8$$

$$\begin{bmatrix} x_1 & x_2 & x_3 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ 4 \end{bmatrix} = 8$$

$$\begin{bmatrix} \chi_1 & \chi_2 & \chi_3 \end{bmatrix} \begin{bmatrix} 3 \\ 6 \\ 9 \end{bmatrix} = 12$$

to find the Inverse

6

$$\begin{bmatrix} x_1 & x_2 & x_3 \end{bmatrix} = \begin{bmatrix} 8 \\ 8 \\ 12 \end{bmatrix} \begin{bmatrix} 2 & 13 \\ 4 & 26 \\ 649 \end{bmatrix}$$

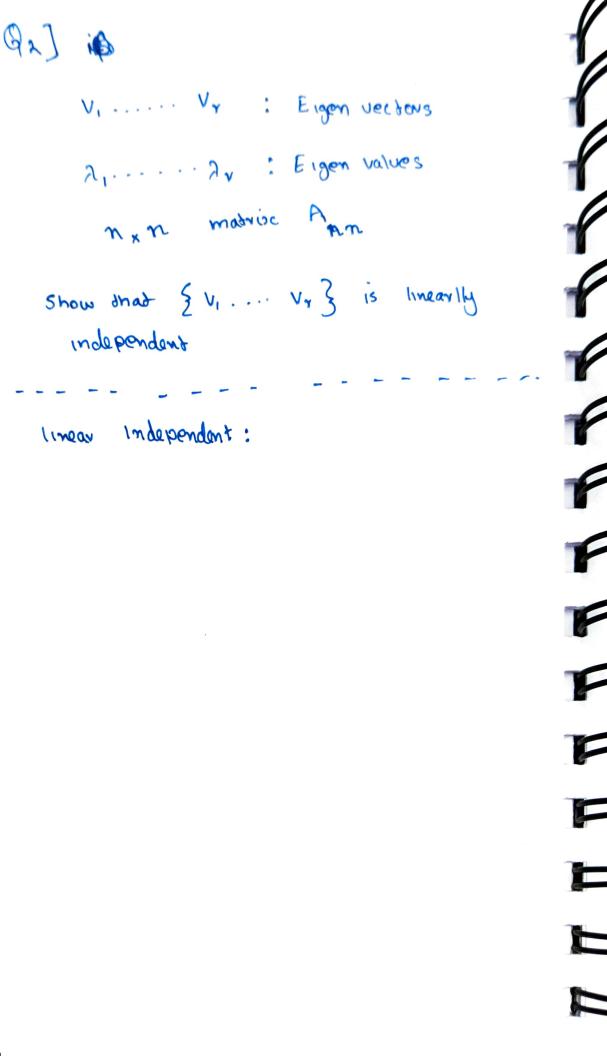
$$A\overline{A^{T}} = I$$

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$$A^{T} = I$$

$$A^{T} =$$



Q3] A&B are non matrices
$$det(AB) = det(A) det(B)$$

$$A = \begin{bmatrix} 1 & \lambda \\ 3 & 4 \end{bmatrix}$$

$$B = \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$$

$$\begin{cases} 2 & 3 & 3 \\ 7 & 8 & 3 \end{cases}$$

$$t(A) = 1 \times 4 + - 3 \times 2$$

= 4 - 6 = -2

det (B) = 5x8 - 6x7

= 40 - 42 = -2





$$AB = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$$

$$= [(1x5+2x1) (1x6+2x8) \\ (3x5+4x1) (3x6+4x8)$$

$$= \begin{bmatrix} 19 & 22 \\ 43 & 40 \end{bmatrix}$$

$$=$$
 $\left[19 \times 40 - 22 \times 43\right]$

in this example

thus not true

The only Siduation where this is true is where A&B are Identity matrix

$$3x_1 - \lambda x_2 = 6$$

$$-5x_1 + 4x_2 = 8$$

Answer:
$$\begin{bmatrix} 3 & -5 \\ -2 & 4 \end{bmatrix} = \begin{bmatrix} 6 \\ 8 \end{bmatrix}$$

$$\begin{bmatrix} x_1 & x_2 \end{bmatrix} = \begin{bmatrix} 6 \\ 8 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ -2 & 4 \end{bmatrix}$$

Let
$$A = \begin{bmatrix} 3 - 5 \\ -2 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 3 & -5 \\ -2 & 4 \end{bmatrix} \begin{bmatrix} x & y \\ 2 & w \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$