

Matrices Assignment

QUESTION1

. If A is a symmetric matrix ,then is $B'AB$ symmetric or skew symmetric

QUESTION2:

Find the value of x , if
$$\begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = \begin{bmatrix} 4 \\ 6 \\ 12 \end{bmatrix}$$

QUESTION3

Form a 2 x 2 matrix A = $[a_{ij}]$ where a_{ij} is given by

QUESTION4

If
$$\begin{bmatrix} a+b & 2 \\ 5 & ab \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 5 & 8 \end{bmatrix}$$
 find a and b.

QUESTION5:

Using matrix method, solve the following equations:

$$2x + 6y = 2$$

$$3x - z = -8$$

$$2x - y + z = -3.$$

QUESTION6:

If $A = \begin{pmatrix} 2 & -3 \\ 3 & 4 \end{pmatrix}$, show that $A^2 - 6A + 17I = 0$. Hence find A^{-1}

QUESTION7

If a matrix $A = \begin{bmatrix} 3 & -4 \\ 1 & 1 \end{bmatrix}$, Show that $(A - A')$ is a skew symmetric matrix , where A' is the transpose of matrix A.

QUESTION 8

If $A = \begin{pmatrix} 2 & -3 \\ 3 & 4 \end{pmatrix}$ and $A^2 = \begin{pmatrix} -5 & -18 \\ 18 & 7 \end{pmatrix}$ find $A^2 - 6A + 17I$

QUESTION 9:

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Find A^{-1} , by using elementary row transformations. Given $A = \begin{bmatrix} 2 & -3 & 3 \\ 2 & 2 & 3 \\ 3 & -2 & 2 \end{bmatrix}$.

QUESTION 10:

$A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$; Find $A^2 - 5A + 7I$. Hence find A^4

QUESTION 11:

If $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$, prove that: $A^n = \begin{bmatrix} 3^n & 3^n & 3^n \\ 3^n & 3^n & 3^n \\ 3^n & 3^n & 3^n \end{bmatrix}$

QUESTION 12:

Find x , y and z if $A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ and $A'A = I$

QUESTION 13:

Find the values of a, b, c and d if $\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$

QUESTION 14:

If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -1 & 3 \\ -1 & 0 & 2 \end{bmatrix}$, then find $2A - B$.

QUESTION 15:

Express the given matrix as the sum of a symmetric and a skew symmetric matrix.

$$\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$$

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