Matrices

1. $If\ A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}, B = \begin{bmatrix} 1 & 2 \\ 2 & 4 \end{bmatrix}, C = \begin{bmatrix} 4 & 1 \\ 1 & 5 \end{bmatrix}\ and\ I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

find A (B + C) − 14I. [2023]

Step−by−step Explanation:

$$(B+C) = \begin{bmatrix} 1+4 & 2+1 \\ 2+1 & 4+5 \end{bmatrix}$$

$$= \begin{bmatrix} 5 & 3 \\ 3 & 9 \end{bmatrix}$$

$$A(B+C) = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix} \begin{bmatrix} 5 & 3 \\ 3 & 9 \end{bmatrix}$$

$$= \begin{bmatrix} 1\times 5+3\times 3 & 1\times 3+3\times 9 \\ 2\times 5+4\times 3 & 2\times 3+4\times 9 \end{bmatrix}$$

$$= \begin{bmatrix} 5+9 & 3+27 \\ 10+12 & 6+36 \end{bmatrix}$$

$$= \begin{bmatrix} 14 & 30 \\ 22 & 42 \end{bmatrix}$$

$$A(B+C) - 14I$$

$$= \begin{bmatrix} 14 & 30 \\ 22 & 42 \end{bmatrix} - 14 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 14 & 30 \\ 22 & 42 \end{bmatrix} - \begin{bmatrix} 14 & 0 \\ 0 & 14 \end{bmatrix}$$

$$= \begin{bmatrix} 14-14 & 30-0 \\ 22-0 & 42-14 \end{bmatrix}$$

$$= \begin{bmatrix} 0 & 30 \\ 22 & 28 \end{bmatrix}$$

2. *If* $\begin{bmatrix} 2 & 0 \\ 0 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$, *the value of x and y respectively are*

(a) $1,\ -2$

(b) $-2,\ 1$

(c) $1,\ 2$

(d) $-2,\ -1$ [2023]

Solution: (a)

Step-by-step Explanation:

$$\begin{bmatrix} 2 & 0 \\ 0 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$$

$$\begin{bmatrix} 2 \times x + 0 \times y \\ 0 \times x + 4 \times y \end{bmatrix} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$$

$$\begin{bmatrix} 2x + 0 \\ 0 + 4y \end{bmatrix} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$$

$$\begin{bmatrix} 2x \\ 4y \end{bmatrix} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$$

$$2x = 2 \quad and \ 4y = -8$$

$$x = 1 \qquad y = -2$$

3. *If* $A = \begin{bmatrix} 3 & 5 \\ 1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 4 \\ 0 & 3 \end{bmatrix}$ *and* $C = \begin{bmatrix} 1 & -1 \\ 2 & 1 \end{bmatrix}$,

then $5A - BC$ *is equal to :*

$$(a)\ \begin{bmatrix} -5 & -23 \\ 1 & 17 \end{bmatrix}$$

$$(b)\ \begin{bmatrix} 5 & 23 \\ 1 & 17 \end{bmatrix}$$

$$(c)\ \begin{bmatrix} -2 & 8 \\ -3 & 3 \end{bmatrix}$$

$$(d)\ \begin{bmatrix} 5 & 23 \\ -1 & 17 \end{bmatrix} \quad [2021\ semester - 1]$$

Solution: (d)

Step-by-step Explanation:

$$5A - BC$$

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

$$= \begin{bmatrix} 15 & 25 \\ 5 & 20 \end{bmatrix} - \begin{bmatrix} 2 \times 1 + 4 \times 2 & 2(-1) + 4 \times 1 \\ 0 \times 1 + 3 \times 2 & 0(-1) + 3 \times 1 \end{bmatrix}$$

$$= \begin{bmatrix} 15 & 25 \\ 5 & 20 \end{bmatrix} - \begin{bmatrix} 2 + 8 & -2 + 4 \\ 0 + 6 & 0 + 3 \end{bmatrix}$$

$$= \begin{bmatrix} 15 & 25 \\ 5 & 20 \end{bmatrix} - \begin{bmatrix} 10 & 2 \\ 6 & 3 \end{bmatrix}$$

$$= \begin{bmatrix} 15 - 10 & 25 - 2 \\ 5 - 6 & 20 - 3 \end{bmatrix}$$

$$= \begin{bmatrix} 5 & 23 \\ -1 & 17 \end{bmatrix}$$

4. $If\ A = \begin{bmatrix} 5 & 10 \\ 3 & -4 \end{bmatrix}$ $and\ I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$,

then AI is equal to :

(a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 5 & 10 \\ -3 & 4 \end{bmatrix}$

(c) $\begin{bmatrix} 5 & 10 \\ 3 & -4 \end{bmatrix}$

(d) $\begin{bmatrix} 15 & 15 \\ -1 & -1 \end{bmatrix}$ [2021 *semester* – 1]

Solution: (c)

Step-by-step Explanation:

$$AI$$

$$= \begin{bmatrix} 5 & 10 \\ 3 & -4 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 5 \times 1 + 10 \times 0 & 5 \times 0 + 10 \times 1 \\ 3 \times 1 + (-4) \times 0 & 3 \times 0 + (-4) \times 1 \end{bmatrix}$$

$$= \begin{bmatrix} 5 + 0 & 0 + 10 \\ 3 + 0 & 0 - 4 \end{bmatrix}$$

$$= \begin{bmatrix} 5 & 10 \\ 3 & -4 \end{bmatrix}$$

5. The product AB of two matrices A and B is possible if:

(a) A and B have the same number of rows.

(b) The number of columns of A is equal to the number of rows of B.

(c) The number of rows of A is equal to the number of columns of B.

(d) A and B have the same number of columns. [2021 Semester-I]

Solution: (b)The number of columns of A is equal to the number of rows of B.

$$6.\ If\ A = \begin{bmatrix} 3 & 0 \\ 5 & 1 \end{bmatrix}\ and\ B = \begin{bmatrix} -4 & 2 \\ 1 & 0 \end{bmatrix},$$
$$find\ A^2 - 2AB + B^2.\ [2020]$$

Step-by-step Explanation:

$$A^2 = \begin{bmatrix} 3 & 0 \\ 5 & 1 \end{bmatrix} \begin{bmatrix} 3 & 0 \\ 5 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 3 \times 3 + 0 \times 5 & 3 \times 0 + 0 \times 1 \\ 5 \times 3 + 1 \times 5 & 5 \times 0 + 1 \times 1 \end{bmatrix}$$

$$= \begin{bmatrix} 9 & 0 \\ 20 & 1 \end{bmatrix}$$

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

$$= \begin{bmatrix} 3(-4) + 0 \times 1 & 3 \times 2 + 0 \times 0 \\ 5(-4) + 1 \times 1 & 5 \times 2 + 1 \times 0 \end{bmatrix}$$

$$= \begin{bmatrix} -12 & 6 \\ -19 & 10 \end{bmatrix}$$

$$B^2 = \begin{bmatrix} -4 & 2 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} -4 & 2 \\ 1 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} (-4)(-4) + 2 \times 1 & (-4) \times 2 + 2 \times 0 \\ 1(-4) + 0 \times 1 & 1 \times 2 + 0 \times 0 \end{bmatrix}$$

$$= \begin{bmatrix} 18 & -8 \\ -4 & 2 \end{bmatrix}$$

Hence, $A^2 - 2AB + B^2$

$$= \begin{bmatrix} 9 & 0 \\ 20 & 1 \end{bmatrix} - 2 \begin{bmatrix} -12 & 6 \\ -19 & 10 \end{bmatrix} + \begin{bmatrix} 18 & -8 \\ -4 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} 9 & 0 \\ 20 & 1 \end{bmatrix} - \begin{bmatrix} -24 & 12 \\ -38 & 20 \end{bmatrix} + \begin{bmatrix} 18 & -8 \\ -4 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} 9 + 24 + 18 & 0 - 12 - 8 \\ 20 + 38 - 4 & 1 - 20 + 2 \end{bmatrix}$$

$$= \begin{bmatrix} 51 & -20 \\ 54 & -17 \end{bmatrix}$$

$$7.\ Given,\ A=\begin{bmatrix} x & 3 \\ y & 3 \end{bmatrix}.\ If\ A^2=3I,\quad [2020]$$

where I *is identity matrix of order* 2, *find* x *and* y.

Solution: x= -3, y= -2

Step-by-step Explanation:

$$A^2=3I$$

$$\begin{bmatrix} x & 3 \\ y & 3 \end{bmatrix}\begin{bmatrix} x & 3 \\ y & 3 \end{bmatrix}=3\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} x^2+3y & 3x+9 \\ xy+3y & 3y+9 \end{bmatrix}=\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$$

$$\therefore 3x+9=0$$

$$\Rightarrow 3x=-9$$

$$\Rightarrow x=-3$$

$$and\ 3y+9=3$$

$$\Rightarrow 3y=-6$$

$$\Rightarrow y=-2$$

$$8.\ Simplify:$$

$$\sin A\begin{bmatrix} \sin A & -\cos A \\ \cos A & \sin A \end{bmatrix}+\cos A\begin{bmatrix} \cos A & \sin A \\ -\sin A & \cos A \end{bmatrix}\quad [2019]$$

Step-by-step Explanation:

$$\sin A\begin{bmatrix}\sin A & -\cos A\\ \cos A & \sin A\end{bmatrix}+\cos A\begin{bmatrix}\cos A & \sin A\\ -\sin A & \cos A\end{bmatrix}$$

$$\begin{bmatrix}\sin^2 A & -\sin A.\cos A\\ \sin A.\cos A & \sin^2 A\end{bmatrix}+\begin{bmatrix}\cos^2 A & \sin A.\cos A\\ -\sin A.\cos A & \cos^2 A\end{bmatrix}$$

$$\begin{bmatrix}\sin^2 A+co^2sA & -\sin A.\cos A+\sin A.\cos A\\ \sin A.\cos A-\sin A.\cos A & \sin^2 A+\cos^2 A\end{bmatrix}$$

$$\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$$

9. *Given,* $\begin{bmatrix}4 & 2\\ -1 & 1\end{bmatrix}\times M=6I,$ *where M is a matrix and I is unit matrix of order* 2×2.

(i) State the order of matrix M.

(ii) Find the matrix M. [2019]

Step-by-step Explanation:

(i) $(m \times n)\ (n \times p) = (m \times p)$

$\Rightarrow (2 \times 2)\ (n \times p) = (2 \times 2)$

$\Rightarrow$ order of matrix M $= (2 \times 2)$

(ii) Let $M=\begin{bmatrix}a & b\\ c & d\end{bmatrix}$

$$\begin{bmatrix}4 & 2\\ -1 & 1\end{bmatrix}\times M=6I$$

$$\begin{bmatrix}4 & 2\\ -1 & 1\end{bmatrix}\begin{bmatrix}a & b\\ c & d\end{bmatrix}=6\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$$

$$\begin{bmatrix}4a+2c & 4b+2d\\ -a+c & -b+d\end{bmatrix}=\begin{bmatrix}6 & 0\\ 0 & 6\end{bmatrix}$$

$\therefore 4a + 2c = 6 \ldots$ (i)
$-a + c = 0 \ldots.$ (ii)
Multiplying (ii) by 4 and adding (i) and (ii)

$$\begin{array}{r} 4a + 2c = 6 \\ + -4a + 4c = 0 \\ \hline 6c = 6 \end{array}$$

$$\therefore \ \mathbf{c = 1}$$

Putting $c = 1$ in (ii)
$-a + 1 = 0$
$a = 1$
Now,
$4b + 2d = 0 \ldots$ (iii)
$-b + d = 6 \ldots$ (iv)
Multiplying (iv) by4 and adding (iii) and (iv)

$$\begin{array}{r} 4b + 2d = 0 \\ + -4b + 4d = 24 \\ \hline 6d = 24 \end{array}$$

$$d = 4$$

$$\textit{Putting } d = 4 \textit{ in } (iv)$$

$$-b + 4 = 6$$

$$b = -2$$

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

10. *Find the value of 'x' and 'y' if :*

$$2\begin{bmatrix} x & 7 \\ 9 & y-5 \end{bmatrix} + \begin{bmatrix} 6 & -7 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} 10 & 7 \\ 22 & 15 \end{bmatrix}$$

Solution: x= 2 and y= 10

Step-by-step Explanation:

$$2\begin{bmatrix} x & 7 \\ 9 & y-5 \end{bmatrix} + \begin{bmatrix} 6 & -7 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} 10 & 7 \\ 22 & 15 \end{bmatrix}$$

$$\begin{bmatrix} 2x & 14 \\ 18 & 2y-10 \end{bmatrix} + \begin{bmatrix} 6 & -7 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} 10 & 7 \\ 22 & 15 \end{bmatrix}$$

$$\begin{bmatrix} 2x+6 & 14-7 \\ 18+4 & 2y-10+5 \end{bmatrix} = \begin{bmatrix} 10 & 7 \\ 22 & 15 \end{bmatrix}$$

$$\begin{bmatrix} 2x+6 & 7 \\ 22 & 2y-5 \end{bmatrix} = \begin{bmatrix} 10 & 7 \\ 22 & 15 \end{bmatrix}$$

$$2x+6 = 10 \text{ and } 2y-5 = 15$$

$$x = 2 \text{ and } y = 10$$

11. $A = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 4 \\ -1 & 7 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$,

find $AC + B^2 - 10C$. [2018]

Step-by-step Explanation:

$$AC = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}\begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 2\times 1+3(-1) & 2\times 0+3\times 4 \\ 5\times 1+7(-1) & 5\times 0+7\times 4 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 12 \\ -2 & 28 \end{bmatrix}$$

$$B^2 = \begin{bmatrix} 0 & 4 \\ -1 & 7 \end{bmatrix} \begin{bmatrix} 0 & 4 \\ -1 & 7 \end{bmatrix}$$

$$\begin{bmatrix} 0 \times 0 + 4(-1) & 0 \times 4 + 4 \times 7 \\ (-1) \times 0 + 7(-1) & (-1) \times 4 + 7 \times 7 \end{bmatrix}$$

$$\begin{bmatrix} -4 & 28 \\ -7 & 45 \end{bmatrix}$$

$$AC + B^2 - 10C$$

$$= \begin{bmatrix} -1 & 12 \\ -2 & 28 \end{bmatrix} + \begin{bmatrix} -4 & 28 \\ -7 & 45 \end{bmatrix} - 10 \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$$

$$= \begin{bmatrix} -1 & 12 \\ -2 & 28 \end{bmatrix} + \begin{bmatrix} -4 & 28 \\ -7 & 45 \end{bmatrix} - \begin{bmatrix} 10 & 0 \\ -10 & 40 \end{bmatrix}$$

$$= \begin{bmatrix} -1 - 4 - 10 & 12 + 28 - 0 \\ -2 - 7 + 10 & 28 + 45 - 40 \end{bmatrix}$$

$$= \begin{bmatrix} -15 & 40 \\ 1 & 33 \end{bmatrix}$$

12. $If\ A = \begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix}\ and\ B = \begin{bmatrix} -2 & 1 \\ -3 & 2 \end{bmatrix}\ and\ A^2 - 5B^2 = 5C,$

$Find\ matrix\ C\ where\ C\ is\ a\ 2\ by\ 2\ matrix.$ [2017]

Step-by-step Explanation:

$$Let\ C = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

$$A^2 = \begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 1 \times 1 + 3 \times 3 & 1 \times 3 + 3 \times 4 \\ 3 \times 1 + 4 \times 3 & 3 \times 3 + 4 \times 4 \end{bmatrix}$$

$$\begin{bmatrix} 10 & 15 \\ 15 & 25 \end{bmatrix}$$

$$B^2 = \begin{bmatrix} -2 & 1 \\ -3 & 2 \end{bmatrix} \begin{bmatrix} -2 & 1 \\ -3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} (-2)(-2) + 1(-3) & (-2)1 + 1 \times 2 \\ (-3)(-2) + 2(-3) & (-3)1 + 2 \times 2 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$A^2 - 5B^2 = 5C$$

$$\begin{bmatrix} 10 & 15 \\ 15 & 25 \end{bmatrix} - 5 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = 5 \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

$$\begin{bmatrix} 10 & 15 \\ 15 & 25 \end{bmatrix} - \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix} = \begin{bmatrix} 5a & 5b \\ 5c & 5d \end{bmatrix}$$

$$\begin{bmatrix} 10-5 & 15-0 \\ 15-0 & 25-5 \end{bmatrix} = \begin{bmatrix} 5a & 5b \\ 5c & 5d \end{bmatrix}$$

$$\begin{bmatrix} 5 & 15 \\ 15 & 20 \end{bmatrix} = \begin{bmatrix} 5a & 5b \\ 5c & 5d \end{bmatrix}$$

5a = 5

a = 1

5b = 15

b = 3

5c = 15

c = 3

5d = 20

d = 4

$$\boldsymbol{matrix\ C} = \begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix}$$

$$13.\ \textit{Given matrix } B = \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix}.$$

$$\textit{Find matrix } X \textit{ if } X = B^2 - 4B.$$

$$\textit{Hence, solve for } a \textit{ and } b, \textit{ given } X \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 5 \\ 50 \end{bmatrix} \ [2017]$$

Step-by-step Explanation:

X = B2 − 4B

$$X = \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix} - 4 \begin{bmatrix} 1 & 1 \\ 8 & 3 \end{bmatrix}$$

$$X = \begin{bmatrix} 1 \times 1 + 1 \times 8 & 1 \times 1 + 1 \times 3 \\ 8 \times 1 + 3 \times 8 & 8 \times 1 + 3 \times 3 \end{bmatrix} - \begin{bmatrix} 4 & 4 \\ 32 & 12 \end{bmatrix}$$

$$X = \begin{bmatrix} 9 & 4 \\ 32 & 17 \end{bmatrix} - \begin{bmatrix} 4 & 4 \\ 32 & 12 \end{bmatrix}$$

$$X = \begin{bmatrix} 9 - 4 & 4 - 4 \\ 32 - 32 & 17 - 12 \end{bmatrix}$$

$$X = \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix}$$

$$Now,\ X \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 5 \\ 50 \end{bmatrix}$$

$$\begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 5 \\ 50 \end{bmatrix}$$

$$\begin{bmatrix} 5a \\ 5b \end{bmatrix} = \begin{bmatrix} 5 \\ 50 \end{bmatrix}$$

5a = 5 and 5b = 50

a = 1 and b = 10

14. *Given* $A = \begin{bmatrix} 2 & 0 \\ -1 & 7 \end{bmatrix}$ *and* $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ *and* $A^2 = 9A + mI$. *Find* m. [2016]

Solution: m= -14

Sep-by-step Explanation:

$$A^2 = 9A + mI$$
$$\begin{bmatrix} 2 & 0 \\ -1 & 7 \end{bmatrix}\begin{bmatrix} 2 & 0 \\ -1 & 7 \end{bmatrix} = 9\begin{bmatrix} 2 & 0 \\ -1 & 7 \end{bmatrix} + m\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$
$$\begin{bmatrix} 2\times 2 + 0(-1) & 2\times 0 + 0\times 7 \\ (-1)\times 2 + 7(-1) & (-1)0 + 7\times 7 \end{bmatrix} = \begin{bmatrix} 18 & 0 \\ -9 & 63 \end{bmatrix} + \begin{bmatrix} m & 0 \\ 0 & m \end{bmatrix}$$
$$\begin{bmatrix} 4 & 0 \\ -9 & 49 \end{bmatrix} = \begin{bmatrix} 18+m & 0 \\ -9 & 63+m \end{bmatrix}$$
$$18 + m = 4$$
$$\Rightarrow \boldsymbol{m = -14}$$

15. *Given matrix* $A = \begin{bmatrix} 4\sin 30^\circ & \cos 0^\circ \\ \cos 0^\circ & 4\sin 30^\circ \end{bmatrix}$ *and* $B = \begin{bmatrix} 4 \\ 5 \end{bmatrix}$,

If AX = B

(i) write the order of matrix X.
(ii) Find the matrix 'X'. [2016]

Step-by-step Explanation:

(i) $(m \times n)\ (n \times p) = (m \times p)$
$(2 \times 2)\ (n \times p) = (2 \times 1)$