

RAVI MATHS TUITION CENTER, PH - 8056206308

Algebra (matrix) test 4

10th Standard 2019 EM

Maths

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 40

7 x 1 = 7

- 1) For the given matrix $A = \begin{pmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{pmatrix}$ the order of the matrix A^T is
 (a) 2×3 (b) 3×2 (c) 3×4 (d) 4×3
- 2) If A is a 2×3 matrix and B is a 3×4 matrix, how many columns does AB have
 (a) 3 (b) 4 (c) 2 (d) 5
- 3) If number of columns and rows are not equal in a matrix then it is said to be a
 (a) diagonal matrix (b) rectangular matrix (c) square matrix (d) identity matrix
- 4) Transpose of a column matrix is
 (a) unit matrix (b) diagonal matrix (c) column matrix (d) row matrix
- 5) Find the matrix X if $2X + \begin{pmatrix} 1 & 3 \\ 5 & 7 \end{pmatrix} = \begin{pmatrix} 5 & 7 \\ 9 & 5 \end{pmatrix}$
 (a) $\begin{pmatrix} -2 & -2 \\ 2 & -1 \end{pmatrix}$ (b) $\begin{pmatrix} 2 & 2 \\ 2 & -1 \end{pmatrix}$ (c) $\begin{pmatrix} 1 & 2 \\ 2 & 2 \end{pmatrix}$ (d) $\begin{pmatrix} 2 & 1 \\ 2 & 2 \end{pmatrix}$
- 6) Which of the following can be calculated from the given matrices $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$,
 (i) A^2
 (ii) B^2
 (iii) AB
 (iv) BA
 (a) (i) and (ii) only (b) (ii) and (iii) only (c) (ii) and (iv) only (d) all of these

- 7) If $A = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 \\ 2 & -1 \\ 0 & 2 \end{pmatrix}$ and $C = \begin{pmatrix} 0 & 1 \\ -2 & 5 \end{pmatrix}$, Which of the following statements are correct?

- (i) $AB + C = \begin{pmatrix} 5 & 5 \\ 5 & 5 \end{pmatrix}$
- (ii) $BC = \begin{pmatrix} 0 & 1 \\ 2 & -3 \\ -4 & 10 \end{pmatrix}$
- (iii) $BA + C = \begin{pmatrix} 2 & 5 \\ 3 & 0 \end{pmatrix}$
- (iv) $(AB)C = \begin{pmatrix} -8 & 20 \\ -8 & 13 \end{pmatrix}$

- (a) (i) and (ii) only (b) (ii) and (iii) only (c) (iii) and (iv) only (d) all of these

5 x 2 = 10

- 8) If a matrix has 16 elements, what are the possible orders it can have?
- 9) Construct a 3×3 matrix whose elements are $a_{ij} = i^2 j^2$
- 10) Find the value of a, b, c, d from the equation $\begin{pmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{pmatrix} = \begin{pmatrix} 1 & 5 \\ 0 & 2 \end{pmatrix}$
- 11)

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4 x 5 = 20

If $A = \begin{bmatrix} 1 & 2 & 0 \\ 3 & 1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 8 & 3 & 1 \\ 2 & 4 & 1 \\ 1 & 3 & 5 \end{bmatrix}$, find AB.

12) If $A = \begin{bmatrix} 2 & 1 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 4 \\ 1 & 5 \end{bmatrix}$ find AB and BA. Check if AB = BA

13) Find the value of a, b, c, d, x, y from the following matrix equation.

$$\begin{bmatrix} d & 8 \\ 3b & a \end{bmatrix} + \begin{bmatrix} 3 & a \\ -2 & -4 \end{bmatrix} = \begin{bmatrix} 2 & 2a \\ b & 4c \end{bmatrix} + \begin{bmatrix} 0 & 1 \\ -5 & 0 \end{bmatrix}$$

14) Given $A = \begin{pmatrix} p & 0 \\ 0 & 2 \end{pmatrix}$, $B = \begin{pmatrix} 0 & -q \\ 1 & 0 \end{pmatrix}$, $C = \begin{pmatrix} 2 & -2 \\ 2 & 2 \end{pmatrix}$ and if $BA = C^2$, find p and q.

15) Find X and Y if $X + Y = \begin{bmatrix} 7 & 0 \\ 3 & 5 \end{bmatrix}$ and $X - Y = \begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$

16) Find x and y if $x \begin{bmatrix} 4 \\ -3 \end{bmatrix} + y \begin{bmatrix} -2 \\ 3 \end{bmatrix} = \begin{bmatrix} 4 \\ 6 \end{bmatrix}$

17) Find the non-zero values of x satisfying the matrix equation $x \begin{bmatrix} 2x & 2 \\ 3 & x \end{bmatrix} + 2 \begin{bmatrix} 8 & 5x \\ 4 & 4x \end{bmatrix} = 2 \begin{bmatrix} x^2 + 8 & 24 \\ 10 & 6x \end{bmatrix}$

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