



MATHS

BOOKS - ACCURATE PUBLICATION

MATRICES

Example Questions Carrying 2 Marks

1. If matrix $A = \left[a_i j
ight]_3 imes 2$ and $a_i j = \left(3i-2j
ight)^2$

, then find matrix A.

2. Construct 2×2 matrix $A = [a_i j]$ whose elements are given by $a_i j = rac{i}{j}.$

Watch Video Solution

3. If
$$x \begin{bmatrix} 2 \\ 3 \end{bmatrix} + y \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$$
 , find the values of x and y.

4. If
$$x \begin{bmatrix} 3 \\ 4 \end{bmatrix} + y \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 11 \end{bmatrix}$$
, then find the

value of x and y.

Watch Video Solution

Watch Video Solution

5. If
$$x \begin{bmatrix} 4 \\ 5 \end{bmatrix} + y \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 6 \\ 12 \end{bmatrix}$$
, then find the

value of x and y.

6. If
$$A = \begin{bmatrix} 5 & 2 \\ -1 & 2 \end{bmatrix}$$
 and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ show that (A - 3I) (A - 4I) = 0

7. If
$$A=egin{bmatrix} 6&2\\-1&3 \end{bmatrix}$$
 and $I=egin{bmatrix} 1&0\\0&1 \end{bmatrix}$ show that $(A-4I)(A-5I)=0$

8. If
$$A=egin{bmatrix} 7&2\\ -1&4 \end{bmatrix}$$
 and $I=egin{bmatrix} 1&0\\ 0&1 \end{bmatrix}$ show that $(A-5I)(A-6I)=0$

9. If
$$A = egin{bmatrix} 1 & -2 \ -3 & 4 \end{bmatrix}$$
 , find $-A^2 + 5A$

Watch Video Solution

10. If
$$A = egin{bmatrix} 1 & -2 \ -3 & 4 \end{bmatrix}$$
 , find $-A^2 + 5A$

11. If A
$$= egin{bmatrix} -2 & -3 \ -2 & 4 \end{bmatrix}$$
 ,find $-A^2+6A$

12. If
$$f(x)=egin{bmatrix}\cos x & -\sin x & 0\\sin x & \cos x & 0\0 & 0 & 1\end{bmatrix}$$
 , show that $f(x).\ f(y)=f(x+y)$

13. If
$$F(\alpha) = \begin{bmatrix} \cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$$
, then show

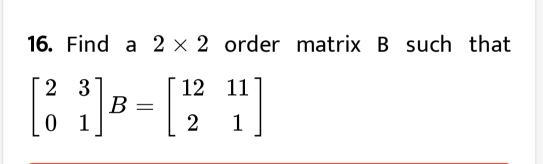
that F(lpha)F(eta)=F(lpha+eta).

Watch Video Solution

14. If
$$F(\theta) = \begin{bmatrix} \cos \theta & -\sin \theta & 0\\ \sin \theta & \cos \theta & 0\\ 0 & 0 & 1 \end{bmatrix}$$
, then show that $F(\theta)F(\phi) = F(\theta + \phi)$.

15. Find a 2×2 order matrix B such that $\begin{bmatrix} 2 & 5 \\ -3 & 7 \end{bmatrix} B = \begin{bmatrix} 17 & -1 \\ 47 & -13 \end{bmatrix}$

Watch Video Solution



17. Find a 2×2 order matrix B such that $\begin{bmatrix} 6 & 5 \\ 5 & 6 \end{bmatrix} B = \begin{bmatrix} 11 & 0 \\ 0 & 11 \end{bmatrix}$

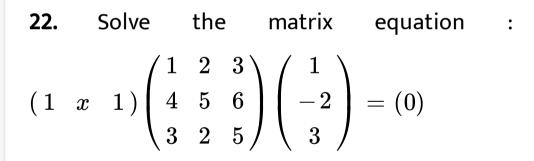
Watch Video Solution

18. If
$$A=egin{bmatrix} 1&0\\-1&7 \end{bmatrix}$$
 and $I=egin{bmatrix} 1&0\\0&1 \end{bmatrix}$, then find k so that $A^2=8A+kI$

19. If A
$$=$$
 $\begin{bmatrix} 0 & 3 \\ -7 & 5 \end{bmatrix}$, $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then find k so that $kA^2 = 5A + 21I$

20. If
$$(A=egin{bmatrix} 3&-2\ 4&-2 \end{bmatrix}$$
), find K such that ($A^2=KA-2I_2$).

21. Solve the matrix equation :
$$(1 \ x \ 1) \begin{pmatrix} 1 \ 2 \ 3 \\ 4 \ 5 \ 6 \\ 3 \ 2 \ 5 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} = (0)$$



23. Solve the matrix equation :
$$(1 \ 1 \ x) \begin{pmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 1 & 0 \end{pmatrix} \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} = (0)$$

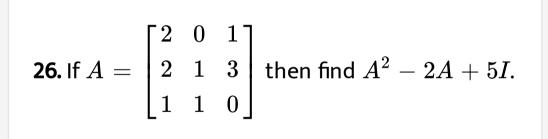
24. If A =
$$\begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$$
 then find

 $A^2 - 3A + 2I$

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

 $A^2 - 3A + 2I.$

Watch Video Solution



27. If A= $[3,2,0],\,[1,4,0][0,0,5]$, then show

that A² -7A+10I3 =0

Watch Video Solution

28. If
$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$$
, then find

 $A^2 - 23A - 40I$ where I is Identify Matrix.

29. If
$$f(x) = x^2 - 5x + 7$$
, find f(A) where $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$

30. If
$$A = \begin{bmatrix} 2 & 1 \\ -1 & 3 \end{bmatrix}$$
 and $f(x) = x^2 - 4x + 2$, then find f(A).

31. If
$$A = \begin{bmatrix} 1 & 2 \\ 3 & -1 \end{bmatrix}$$
 and $f(x) = x^2 - 7x + 10$, then find f(A).

32. If
$$A = \begin{bmatrix} 2 & 1 \\ 3 & -5 \end{bmatrix}$$
 and $f(x) = x^2 - 2x + 3$, then find f(A).

33. If
$$A = \begin{pmatrix} 3 & -4 \\ 1 & -1 \end{pmatrix}$$
, then prove by Mathematical Induction that : $A^n = \begin{pmatrix} 1+2n & -4n \\ n & 1-2n \end{pmatrix}$, where $n \in N$

34. Prove the following by principle of mathematical induction :

(a) If
$$A=egin{bmatrix} 11&-25\ 4&-9 \end{bmatrix}$$
, then $A^n=egin{bmatrix} 1+10n&-25n\ 4n&1-10n \end{bmatrix}$ where n is a

positive integer.





35. If
$$A = \begin{pmatrix} -1 & -4 \\ 1 & 3 \end{pmatrix}$$
, then prove by Mathematical Induction that : $A^n = \begin{pmatrix} 1-2n & -4n \\ n & 1+2n \end{pmatrix}$, where $n \in N$

36. If
$$A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$$
, $B = \begin{bmatrix} 1 & 2 \\ 4 & 6 \end{bmatrix}$, then verify that (AB)' = B' A'

37. If
$$A = \begin{bmatrix} 3 & 4 \\ 4 & 5 \end{bmatrix}$$
, $B = \begin{bmatrix} 5 & 3 \\ 2 & 1 \end{bmatrix}$ then verify that (AB)' = B' A'

38. If
$$A = \begin{bmatrix} 2 & 4 \\ 3 & 5 \end{bmatrix}$$
 and $B = \begin{bmatrix} 5 & 4 \\ 3 & 2 \end{bmatrix}$ then verify that (AB)' = B' A'

39. If A =
$$\begin{bmatrix} -2 \\ 4 \\ 5 \end{bmatrix}$$
, $B = \begin{bmatrix} 1 & 3 & -6 \end{bmatrix}$, then

verify that (AB)' = B'A'

Watch Video Solution

40. If
$$A = \begin{bmatrix} 1 \\ 5 \\ 6 \end{bmatrix}$$
, $B = \begin{bmatrix} 2 & 1 & -5 \end{bmatrix}$, verify that $(AB)' = B'A'$.

41. If
$$A = \begin{bmatrix} 7 \\ 9 \\ -8 \end{bmatrix}$$
, $B = \begin{bmatrix} 2 & 0 & -2 \end{bmatrix}$, verify

that (AB)' = B'A'.

Watch Video Solution

42. If
$$A = egin{bmatrix} 3 \ -1 \ 5 \end{bmatrix}, B = [-6, 7, 10]$$
, verify that

: (AB)' = B'A'.

43. If
$$A = \begin{bmatrix} 4 \\ 0 \\ 7 \end{bmatrix}, B = \begin{bmatrix} -1 & -6 & 5 \end{bmatrix}$$
, then

verify that (AB)'=B'A'.

Watch Video Solution

44. If
$$A = \begin{bmatrix} 3 \\ -1 \\ 4 \end{bmatrix}, B = \begin{bmatrix} 7 - 712 \end{bmatrix}$$
 then verify

that (AB)' : B' A'.

45. If
$$A = \begin{bmatrix} 3 \\ -4 \\ 5 \end{bmatrix}, B = \begin{bmatrix} 6 & 1 & -1 \end{bmatrix}$$
, the verify

that (AB)'=B'A'.

Watch Video Solution

46. If
$$A = \begin{bmatrix} 2 \\ -4 \\ 1 \end{bmatrix}, B = [(6)(3)(-1)]$$
 then

verify that (AB)'=B'A'.

47. If
$$A = \begin{bmatrix} 2 \\ -4 \\ 1 \end{bmatrix}$$
, $B = [(6)(3)(-1)]$ then

verify that (AB)'=B'A'.

Watch Video Solution

48. If
$$A = \begin{bmatrix} 3 \\ 1 \\ 2 \end{bmatrix}, B = \begin{bmatrix} 1 & -2 & 5 \end{bmatrix}$$
 then verify

that (AB)' = B'A'.

49. For the matrix $A = \begin{bmatrix} 1 & 5 \\ 6 & 7 \end{bmatrix}$, verify that

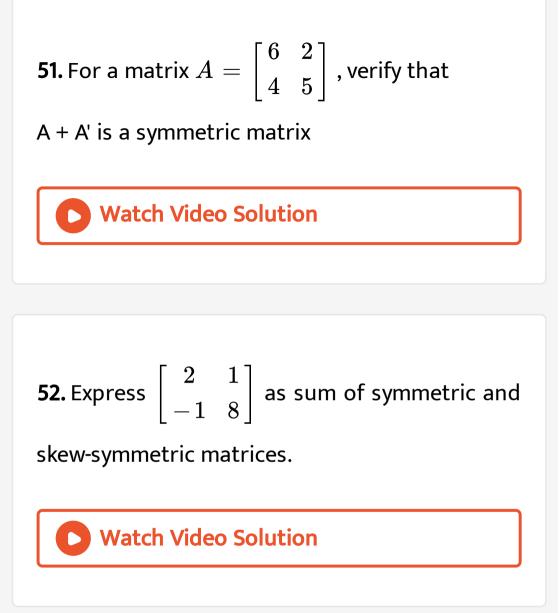
 $\left(A-A^{\,\prime}
ight)$ is a skew symmetric matrix.

Watch Video Solution

50. For the matrix
$$A=egin{pmatrix} 2 & 5 \ 4 & 1 \end{pmatrix}$$
 , verify that : A

+ A' is a Symmetric Matrix





53. Express the following matrices as the sum of

a symmetric and a skew symmetric matrix :

$$(ii) \begin{bmatrix} 5 & 1 \\ 7 & 0 \end{bmatrix}$$
$$(iii) \begin{bmatrix} 2 & 1 \\ 3 & 0 \end{bmatrix}$$

Watch Video Solution

54. Express the following matrices as the sum of

a symmetric and a skew symmetric matrix :



1. Express the matrix
$$A = \begin{bmatrix} -2 & 3 & 1 \\ 1 & 3 & 2 \\ 5 & -4 & 5 \end{bmatrix}$$
 as

the sum of a symmetric and skew - symmetric

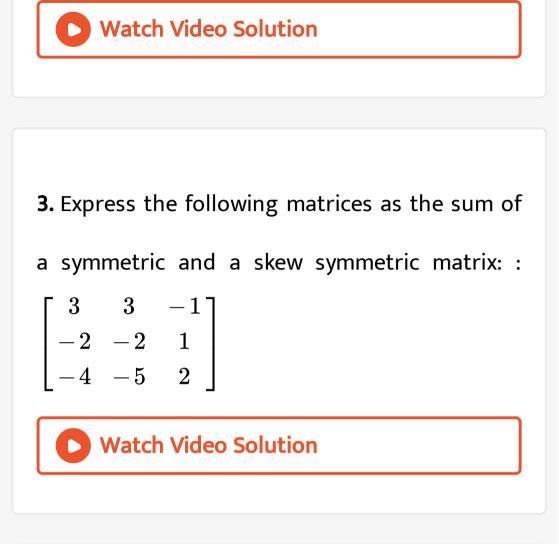
matrix



2. Express the following matrices as the sum of

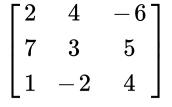
a symmetric and a skew symmetric matrix :

$$A = egin{bmatrix} 2 & -2 & -4 \ -1 & 3 & 4 \ 1 & -2 & -3 \end{bmatrix}$$



4. Express the following as sum of symmetric

and skew symmetric matrix



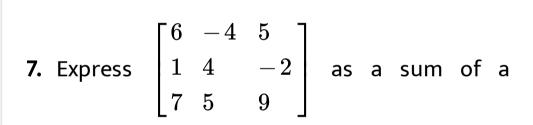
5. Express
$$\begin{bmatrix} 1 & 3 & 5 \\ -6 & 8 & 3 \\ -4 & 6 & 5 \end{bmatrix}$$
 as a sum of symmetric

and skew-symmetric matrices.

6. Express
$$\begin{bmatrix} 2 & -4 & 5 \\ 1 & 8 & -2 \\ 7 & 3 & 9 \end{bmatrix}$$
 as a sum of a

symmetric and a skew-symmetric matrix.

Watch Video Solution



symmetric and a skew-symmetric matrix.

8. Express
$$\begin{bmatrix} 2 & 7 & 5 \\ 1 & 8 & -2 \\ 6 & 5 & 9 \end{bmatrix}$$
 as a sum of a

symmetric and a skew-symmetric matrix.

Watch Video Solution

9. Express the matrix $A = \begin{pmatrix} -3 & 5 & 6 \\ -1 & 0 & 1 \\ 2 & 1 & 2 \end{pmatrix}$ as the sum of a symmetric and skew-symmetric

matrix.



10. Express the matrix $A=egin{pmatrix}2&1&3\\3&-2&1\\-1&3&1\end{pmatrix}$ as

the sum of a symmetric and skew-symmetric matrix.



11. Express
$$\begin{pmatrix} 1 & -2 & 3 \\ 7 & 0 & 5 \\ -4 & 1 & 9 \end{pmatrix}$$
 as the sum of a

symmetric and a skew-symmetric matrix .

12. Express
$$\begin{pmatrix} 1 & 2 & 3 \\ 7 & 4 & 5 \\ 4 & 1 & 9 \end{pmatrix}$$
 as the sum of a

symmetric and a skew-symmetric matrix .



13. Express
$$\begin{pmatrix} 1 & 2 & -3 \\ 7 & 0 & 5 \\ -4 & 8 & 9 \end{pmatrix}$$
 as the sum of a

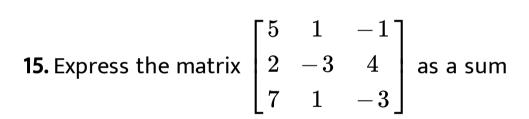
symmetric and a skew-symmetric matrix .



14. Express
$$\begin{bmatrix} 2 & 5 & -1 \\ 3 & 1 & 5 \\ 7 & 6 & 9 \end{bmatrix}$$
 as a sum of

symmetric and skew-symmetric matrices.

Watch Video Solution



of symmetric and skew symmetric matrix

Questions Carrying 1 Mark Type I Multiple Choice Questions

1. If
$$\begin{bmatrix} x + y & 1 \\ 2y & 5 \end{bmatrix} = \begin{bmatrix} 7 & 1 \\ 4 & 5 \end{bmatrix}$$
, find 'x'
A. 6
B. 4
C. 5
D. 2

Answer: C



2. If
$$\begin{bmatrix} 2x - y & 5 \\ 3 & y \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 3 & -2 \end{bmatrix}$$
, then x equals :

- A. 3
- $\mathsf{B.6}$
- $\mathsf{C}.-2$
- $\mathsf{D.}\ 2$

Answer: D

3. The matrix $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ is equal to:

A. a unit matrix

B. a diagonal matrix

C. a scalar matrix

D. none of these .

Answer: D



4. The matrix $A = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$ is equal to:

A. a unit matrix

B. a diagonal matrix

C. a scalar matrix

D. none of these .

Answer: D



5. The number of all possible matrices of order

3 imes 3 with each entry 0 or 1 is:

A. 27

B. 18

C. 81

D. 512

Answer: D

6. The number of all possible matrices of order

3 imes 3 with each element 0 or 2 is :

A. 27

 $\mathsf{B.}\,18$

C. 81

D. 512

Answer: D

7. If matrix A is of order 4 imes 3, then each row of

matrix A contains elements :

 $\mathsf{A}.\,12$

 $\mathsf{B.4}$

C. 3

D. none of these .

Answer: C

8. If A + B = C, where A and B are matrices of order 2 imes 3, then order of C is :

- A. 3 imes 2
- $\text{B.}\,2\times3$
- ${\rm C.}\,2\times2$
- D. 3 imes 3

Answer: B

9. If A + B = C, where A and B are matrices of order 3×5 , then order of C is :

A. 3 imes 5

 $\text{B.}\,3\times3$

 $\text{C.}~5\times5$

D. 5 imes 3

Answer: A

10. If A+B=C where B and A are matrices of order 5 imes 5 then the order of matrix C is :

A. 3 imes 5

 $\text{B.} 3\times3$

 $\mathrm{C.}\,5\times5$

D. 5 imes 3

Answer: C

11. If
$$X = \begin{bmatrix} 2 & 0 \\ 0 & 4 \end{bmatrix}$$
 and $Y = \begin{bmatrix} -2 & 0 \\ -2 & 0 \end{bmatrix}$ then X + Y equal to :

A.
$$\begin{bmatrix} 0 & 0 \\ -2 & 0 \end{bmatrix}$$

B.
$$\begin{bmatrix} 0 & 0 \\ 0 & 4 \end{bmatrix}$$

C.
$$\begin{bmatrix} 0 & 0 \\ -2 & 4 \end{bmatrix}$$

D.
$$\begin{bmatrix} 2 & 0 \\ -2 & 4 \end{bmatrix}$$

Answer: C

12. If A is matrix of a order 2×3 and B is a matrix of order 3×2 , then AB is a matrix of order:

- A. 2 imes 3
- B. 3 imes 2
- ${\rm C.}\,2\times2$
- D. 3 imes 3

Answer: C



13. If A is matrix of a order 2×3 and B is a matrix of order 3×2 , then AB is a matrix of order:

- A. 2 imes 3
- B. 3 imes 2
- ${\rm C.}\,2\times2$
- D. 3 imes 3

Answer: C



14. If AB = C, where B and C are matrices of order

3 imes 5 , then order of A is :

A. 3 imes 3

 $\text{B.}\,3\times5$

 $\mathrm{C.}\,5\times5$

D. 5 imes 3

Answer: A

15. AB = C, where B and C are matrices of order

3 imes 4 , then order of A is :

A. 4 imes 4

 $\text{B.}\,3\times4$

 $\text{C.}\,4\times3$

 ${\rm D.}\,3\times3$

Answer: D

16. If AB = C, where B and C are matrices of order

4 imes 5, then the order of matrix A is :

A. 4 imes 5

 $\text{B.}\,4\times4$

 $\mathrm{C.}\,5\times5$

D. 5 imes 4

Answer: B

17. If AB = C where Band C are matrices of orders 5 imes 3 then order of A is :

A. 5 imes 5

 $\text{B.}\,3\times3$

 $\text{C.}\,3\times5$

D. 5 imes 3

Answer: A

18. If
$$A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}, B = \begin{bmatrix} 2 \\ 3 \\ 1 \end{bmatrix}$$
, then AB

equals

A.
$$(2 \ 6 \ 3)$$

B. $\begin{pmatrix} 2 \\ 6 \\ 3 \end{pmatrix}$
C. (12)

D. None of these .

Answer: D

19. If
$$A = \begin{bmatrix} 2 & 1 & 3 \end{bmatrix}, B = \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}$$
 then AB equals

$$\mathsf{B.} \begin{pmatrix} 6\\2\\3 \end{pmatrix}$$
$$\mathsf{C.} (11)$$

D. None of these .

Answer: C



20. If
$$A = egin{bmatrix} lpha & eta \ \gamma & -lpha \end{bmatrix}$$
 is such that $A^2 = I$, then

a.
$$1 + \alpha^2 + \beta\gamma = 0$$

b. $1 - \alpha^2 + \beta\gamma = 0$
c. $1 - \alpha^2 - \beta\gamma = 0$
d. $1 + \alpha^2 - \beta\gamma = 0$

A.
$$1+lpha^2+eta\gamma=0$$

B. $1-lpha^2+eta\gamma=0$
C. $1-lpha^2-eta\gamma=0$

D.
$$1+lpha^2-eta\gamma=0$$

Answer: C



21. Assume X, Y, Z, W and P are matrices of order $2 \times n$, $3 \times k$, $2 \times p$, $n \times 3$ and $p \times k$ respectively. The restriction on n, k and p so that PY + WY will be defined are:

A.
$$k=3, p=n$$

B. k is arbitrary, p=2

C. p is arbitrary, k=3

D. k=2, p=3

Answer: A



22. The matrix $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ is a (a) identity matrix (b) Diagonal matrix (c) symmetric matrix (d) skew symmetric matrix

A. a unit matrix

- B. a diagonal matrix
- C. a symmetric matrix
- D. a skew-symmetric matrix

Answer: C



23. The matrix $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ is a (a) identity matrix (b) Diagonal matrix (c) symmetric matrix (d) skew symmetric matrix

A. a unit matrix

B. a diagonal matrix

C. a symmetric matrix

D. a skew-symmetric matrix





24. If A is any square matrix then A + A' is a :

A. skew-symmetric matrix

B. symmetric matrix

C. null matrix

D. identity matrix





25. If A, B are symmetric matrices of same order,

then AB - BA is a :

A. Skew symmetric matrix

B. symmetric matrix

C. Zero matrix

D. identity matrix

Answer: A



26. If A is a matrix of order 5×2 and B is a matrix of order 2×5 , then the order of matrix $(BA)^T$ is equal to :

A. 2 imes 2

 $\text{B.}\,2\times5$

 $\text{C.}\,3\times3$

D. 5 imes 5

Answer: A

27. If A is a matrix of order 3×2 and B is a matrix of order 2×3 , then the order of matrix $(BA)^T$ is equal to :

A. 2 imes 2

 ${\rm B.2\times3}$

 $\text{C.}\,4\times3$

 ${\rm D.}\,3\times3$

Answer: A

28. If order of matrix A is 2×3 and order of matrix B is 3×5 , then order of matrix B 'A' is :

- A. 5 imes 2
- $\text{B.}\,2\times5$
- $\text{C.}~5\times3$
- D. 3 imes 2

Answer: A



29. If order of matrix A is 4×3 and order of matrix B is 3×5 , then order of matrix B 'A ' is :

A. 5 imes 2

- $\text{B.}\,4\times5$
- $\mathrm{C.}\,5\times4$
- D. 3 imes 2

Answer: A

30. If the matrix A is both symmetric and skew symmetric, then :

A. A is a diagonal matrix

B. A is zero matrix

C. A is a square matrix

D. None of these .

Answer: B

31. If A = [[123]], then AA' is equal to :

)

A.
$$(1 \ 4 \ 9$$

B. $\begin{pmatrix} 1 \\ 4 \\ 9 \end{pmatrix}$
C. (14)

D. (6)

Answer: C



32. Choose the correct option in the question :

If $A= egin{pmatrix} 3 & 2 & 1 \end{pmatrix}$ then A A' is equal to

A. $(4 \ 1 \ 9)$ B. $\begin{pmatrix} 4 \\ 1 \\ 9 \end{pmatrix}$ C. (14)

D. (6)

Answer: C



33. If A and B are two invertible matrices, then

the inverse of AB is equal to :

A. AB

- B. BA
- C. $A^{-1}B^{-1}$

D.
$$B^{-1}A^{-1}$$

Answer: D



34. If A and B are square matrices of the same order, then (A + B)(A - B) is equal to

A. A^2-B^2

 $\mathsf{B}.\,A^2 - BA - AB^2 - B^2$

 $\mathsf{C}.\,A^2-B^2+BA-AB$

 $\mathsf{D}.\,A^2 - BA + B^2 + AB$

Answer: C

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

, then

A. Only AB is defined

B. Only BA is defined

C. AB and BA both are defined

D. AB and BA both are not defined

Answer: C

36. The matrix $\begin{bmatrix} 0 & 0 & 5 \\ 0 & 5 & 0 \\ 5 & 0 & 0 \end{bmatrix}$ is a scalar matrix.

State true or false. If false, then what type of

matrix is this?

A. scalar matrix

B. diagonal matrix

C. unit matrix

D. square matrix

Answer: D

37. If A and B are symmetric matrices of same

order then AB - BA is a :

A. Skew symmetric matrix

B. Null matrix

C. Symmetric matrix

D. None of these .

Answer: A

38. The matrix
$$P = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{bmatrix}$$
 is a

A. square matrix

B. diagonal matrix

C. unit matrix

D. None

Answer: A

39. The number of all possible matrices of order

3 imes 3 with each element 0 or 2 is :

A. 9

B. 27

C. 81

 $\mathsf{D.}\ 512$

Answer: D

40. If
$$\begin{bmatrix} 2x+y & 4x \\ 5x-7 & 4x \end{bmatrix} = \begin{bmatrix} 7 & 7y-13 \\ y & x+6 \end{bmatrix}$$
 then

the value of x + y is

A.
$$x=3, y=1$$

B.
$$x=2, y=3$$

C.
$$x=2,y=4$$

D.
$$x=3, y=3$$

Answer: B

41. If matrix $A = ig[a_{ij}ig]_{2 imes 2}$, where

 $a_{ij} egin{array}{cccc} = 1 & ext{if} & i
eq j \ = 0 & ext{if} & i = j \end{array}$ then A^2 is equal to

- A. I
- B.O
- $\mathsf{C.}\,2\,\mathsf{I}$
- D. $\frac{1}{2}$ I

Answer: D

42. If A and B are two matrices of the order 3 imes m and 3 imes n , respectively , and m=n, then the order of matrix (5A - 2B) is

A. m imes 3

B. 3 imes 3

 $\mathsf{C}.\,m imes n$

D. 3 imes n

Answer: D

43. If
$$A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$$
 then A^2 is equal to
A. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
B. $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$
C. $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$
D. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

Answer: D



44. If matrix $A = \left[a_{ij}
ight]_{2 imes 2}$, where

 $a_{ij} egin{array}{cccc} =1 & ext{if} & i
eq j \ =0 & ext{if} & i=j \end{array}$ then A^2 is equal to

A. I

- B.A
- C. O
- D. None of these .

Answer: A

45. The matrix
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 4 \end{bmatrix}$$
 is a

A. identity matrix

B. symmetric matrix

C. skew symmetric matrix

D. none of these .

Answer: B

46. The matrix
$$\begin{bmatrix} 0 & -5 & 8 \\ 5 & 0 & 12 \\ -8 & -12 & 0 \end{bmatrix}$$
 is a

A. diagonal matrix

B. symmetric

C. skew symmetric matrix

D. scalar matrix

Answer: C

47. If A is a matrix of order $m \times n$ and B is a matrix such that AB' and B'A are both defined, then order of matrix B is

A. m imes m

 $\mathsf{B}.\,n imes n$

 $\mathsf{C.}\,n imes m$

D. m imes n

Answer: D

48. If A and B are symmetric matrices of same

order then AB - BA is a :

A. Skew symmetric matrix

B. Null matrix

C. Symmetric matrix

D. unit matrix

Answer: A

49. If A is square matrix suct that $A^2 = I$, then $(A - I)^3 + (A + I)^3 - 7$ A is equal to A. A B. I-A C. I+A

 $\mathsf{D}.\,3\,\mathsf{A}$

Answer: A

50. For any two matrices A and B, we have

A. AB=BA

 $\mathsf{B.}\,AB\neq BA$

C. AB=0

D. None of the above

Answer: D



Questions Carrying 1 Mark Type Ii Fill In The Blanks Questions

1.
$$A = ig[a_{ij}ig]_{m imes n}$$
 is a square matrix, if

- a. m < n
- b. m > n
- c. m = n
- d. none of these



2. The number of all possible matrices of order

3 imes 3 with each entry 0 or 3 is

Watch Video Solution

3. If A is a matrix of order 3 imes 4, then each

column of matrix A contains elements :

4. If A+B=C where A and B are matrices of order

4 imes 6 then order of C is

(ii) If A+B=C where B and A are matrices of order

3 imes 3 then the order of matrix C is



5. X, Z are matrices of order 2 imes n, 2 imes p respectively.

If n = p, then the order of the matrix 7X - 5Z is :

6. If A is a matrix of order 3×4 and B is a matrix of order 4×3 , find the order of the matrix (AB).



7. If AB = C, where B and C are matrices of order

2 imes 4 , then order of A is :

8. If
$$A = \begin{bmatrix} 2 & 3 & 1 \end{bmatrix}, B = \begin{bmatrix} 3 \\ 1 \\ 2 \end{bmatrix}$$
, then AB

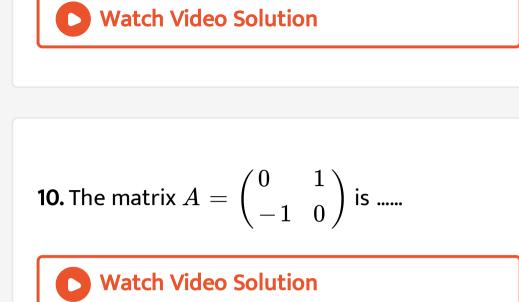
equals



9. If A is square matrix such that $A^2 = A$, then $(I + A)^3 - 7A$ is equal to a. A b. I - A

c. l

d. 3A

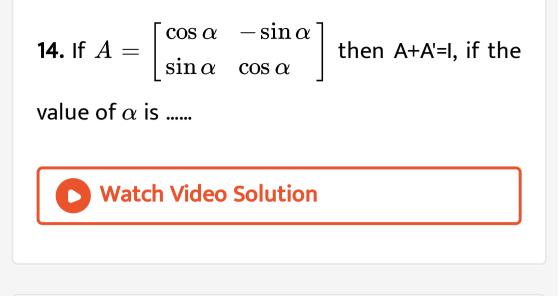


11. If A and B are symmetric matrices of same order then AB + BA is a :

12. If A is a matrix of order 3×4 and B is a matrix of order 4×3 , then the order of matrix $(BA)^T$ is equal to :

Watch Video Solution

13. If order of matrix A is 3 imes 3 and order of matrix B is 3 imes 5, then order of matrix B 'A ' is :



15. Choose the correct option in the question :

If $A= egin{pmatrix} 3 & 2 & 1 \end{pmatrix}$ then A A' is equal to

16. Matrices A and B will be inverse of each other only if
Watch Video Solution

17. If A and B are two skew symmetric matrices

of same order, then AB is symmetric matrix if

18. If A and B are matrices of same order, then

(3A-2B) is equal to

Watch Video Solution

19. Addition of matrices is defined if order of the

matrices is

20. Matrix is both symmetric and skew symmetric matrix .

 Watch Video Solution

21. Sum of two skew symmetric matrices is

always matrix .

22. The negative of a matrix is obtained by multiplying it byWatch Video Solution

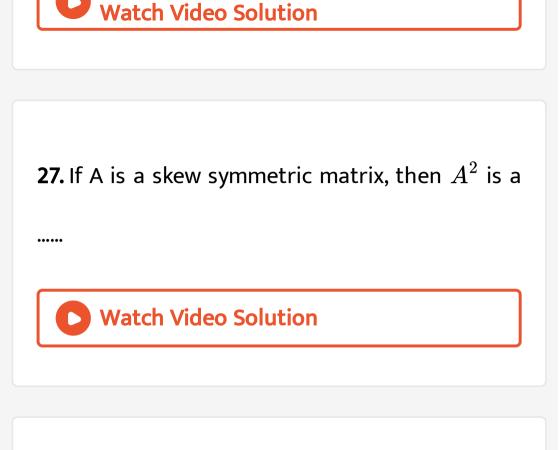
23. The product of any matrix by the scalar

Is the null matrix .

24. A matrix which is not a square matrix is called a Matrix . Watch Video Solution 25. Matrix multiplication is over addition . Watch Video Solution **26.** If A is a symmetric matrix , then A^3 is a

matrix .





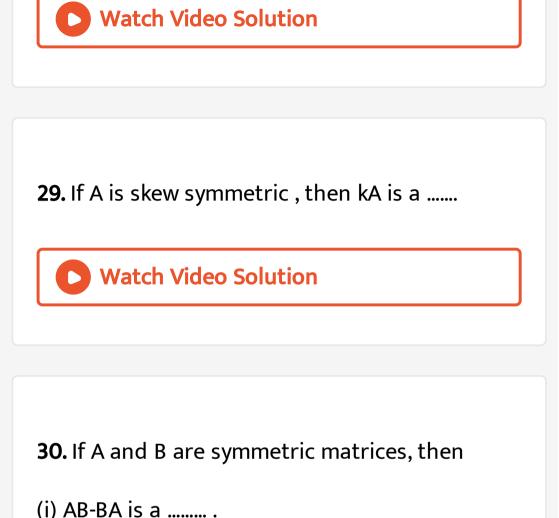
28. If A and B are square matrices of the same

order, then

(i) (AB)=

(ii) (kA) =

(iii) [k(A-B)] =



- (ii) BA-2 BA is a

31. If A is symmetric matrix, then B' AB is

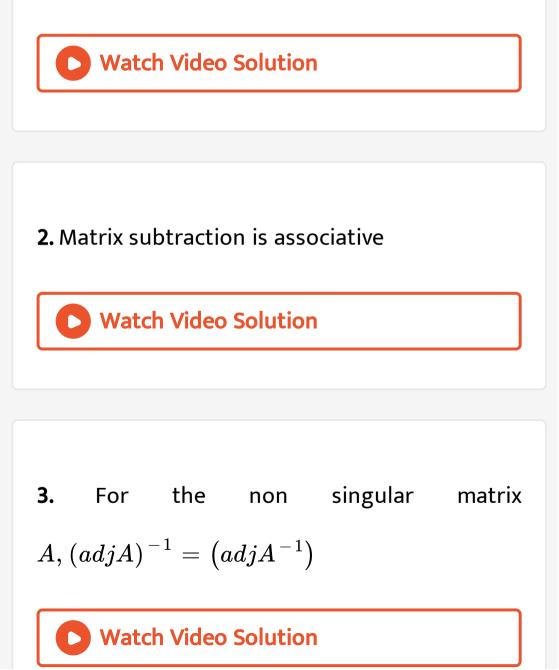
> Watch Video Solution

32. If A and B are symmetric matrices of the same order, then show that AB is symmetric if and only if A and B commute, that is AB = BA.

Watch Video Solution

Questions Carrying 1 Mark Type Iii True Or False Questions 1. If two matrices A and B are of the same order,

then 2A + B = B + 2A.



4. $AB = AC \Rightarrow B = C$ for any three matrices

of same order.

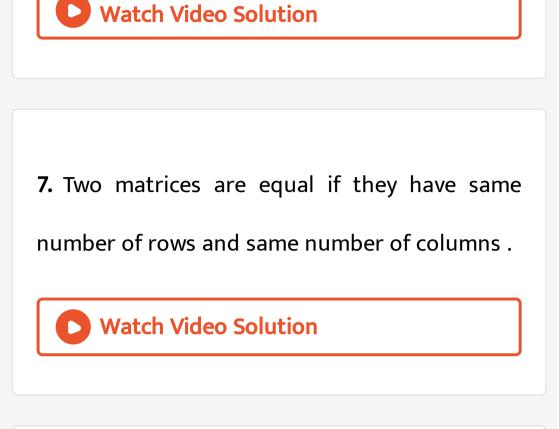


5. A matrix denotes a number

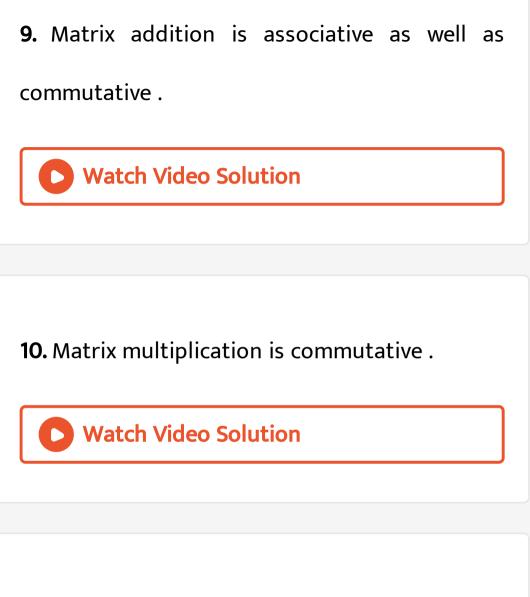


6. Matrices of any order can be added .





8. Matrices of different order can not be subtracted .



11. A square matrix where every element is unity

is called an identity matrix .





12. If A and B are two square matrices of the

same order, then A+B=B+A.

Watch Video Solution

13. If A and B are two matrices of the same

order, then A-B=B-A.

14. If matrix AB=O, then A=O or B=O or both A

and B are null matrices .

Watch Video Solution

15. Transpose of a column matrix is a column matrix .

16. If A and B are two square matrices of the

same order, then AB=BA.



17. If each of the three matrices of the same order are symmetric then their sum is a symmetric matrix.

18. If A and B are two square matrices of the

same order, then AB=BA.



19. If (AB)=B'A', where A and B are not square matrices, then number of rows in A is equal to number of column in B and number of columns in A is equal to number of rows in B.

20. If A, B and C are square matrices of same

order, then AB=AC always implies that B=C.



21. A A' is always a symmetric matrix for any

matrix A .

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

,

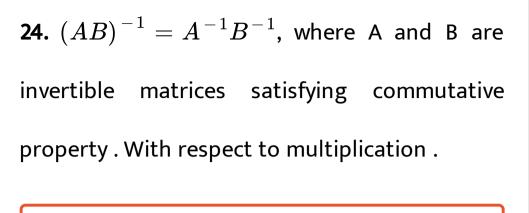
then AB and BA are defined and equal.



23. If A is skew symmetric matrix, then A^2 is a

symmetric matrix.







25. The number of all possible matrices of order

3 imes 3 with each entry 0 or 1 is 27 .



26. If matrix A is of order 4 imes 3, then each row

of matrix A contains elements :



27. If A + B = C, where A and B are matrices

of order 2 imes 3, then order of C is :



28. The solution of matrix equation $\begin{bmatrix} x & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ -2 & 0 \end{bmatrix} = O$ is 5.

Watch Video Solution

29. Choose the correct option in the question :

If
$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 3 & 1 \\ 2 & 5 \end{pmatrix} = \begin{pmatrix} 7 & 11 \\ k & 23 \end{pmatrix}$$
, then k

equals

30. AB=AC implies B=C .



31. If A is matrix of a order 2×3 and B is a matrix of order 3×2 , then AB is a matrix of order:

32. If AB = C, where B and C are matrices of

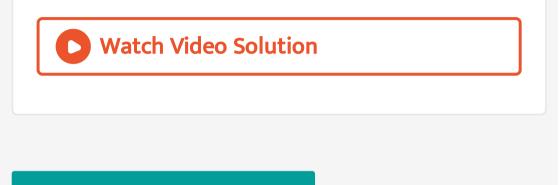
order 3 imes 5, then order of A is :



33. If A is square matrix such that $A^2 = A$,then $\left(I + A
ight)^3 - 7A$ is equal to:

34. The necessary and sufficient condition for a

matrix A to be skew symmetric is that A=-A.



Questions Carrying 2 Marks

1. Find the values of a, b, c and d from the

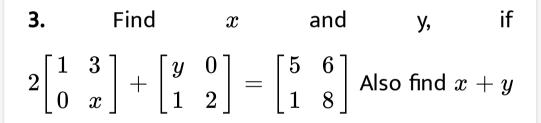
following equations

$$egin{bmatrix} a-b & 2a+c \ 2a-b & 3c+d \end{bmatrix} = egin{bmatrix} -1 & 5 \ 0 & 13 \end{bmatrix}$$

2. If
$$\begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix} = \begin{bmatrix} 2a+2 & b+2 \\ 8 & a-8b \end{bmatrix}$$
 write

the value of $a-2\,\mathrm{b}$.

Watch Video Solution



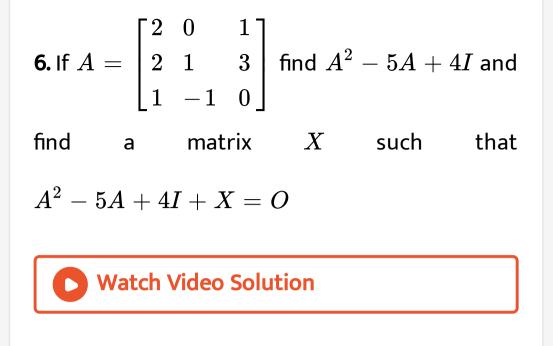
4. If A is square matrix such that $A^2 = A$, then write the value of $7A - (I + A)^3$, where I is an identity matrix

identity matrix .

Watch Video Solution

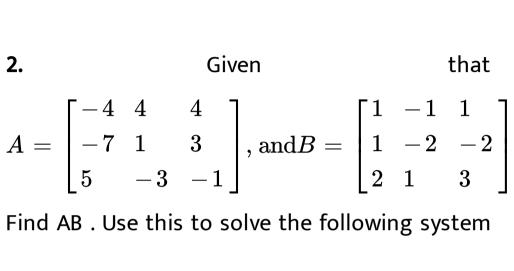
5. Let
$$A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}, C = \begin{bmatrix} 2 & 5 \\ 3 & 8 \end{bmatrix}$$

Find a matrix D such that CD – AB = O.



Questions Carrying 6 Marks

1. If
$$A = \begin{bmatrix} 1 & -2 & 0 \\ 2 & 1 & 3 \\ 0 & -2 & 1 \end{bmatrix}$$
, $B = \begin{bmatrix} 7 & 2 & -6 \\ -2 & 1 & -3 \\ -4 & 2 & 5 \end{bmatrix}$, find AB Also solve $x - 2y = 10, 2x + y + 3z = 8, -2y + z = 7$



of linear equations :

x-y+z=4, x-2y-2z=9, 2x+y+3z=1

Watch Video Solution

3. Express the matrix A as the sum of a

symmetric and skew-symmetric matrix, where :

$$A = egin{bmatrix} 3 & -1 & 0 \ 2 & 0 & 3 \ 1 & -1 & 2 \end{bmatrix}$$

Watch Video Solution

4. if
$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & -1 \\ a & 2 & b \end{bmatrix}$$
 is a matrix satisfying $AA' = 9l_3$, find the value of $|a| + |b|$.