

Topic: “Matrices”

1. Solve the following equations by reduction method

$$2x + 3y + 4z = -9, \quad 3x + y + 2z = -12$$

$$4x + 2y + 2z + 12 = 0$$

2. Solve the equations $x + 2y + 3z = 0$

$$2x + 3y + z = 4, \quad 4x + 5y + 4z = 15 \quad \text{by using reduction method}$$

3. Solve the following equations using reduction method

$$x + y + z = 3, \quad 3x - 2y + 3z = 4, \quad 5x + 5y + z = 11$$

4. Solve the following equations using method of Reduction.

$$x + y + z = -2, \quad 2x + 3y - z = -3, \quad 3x + 4y + z = 1$$

5. Solve the following equations by Reduction method

$$x - y + z = 2, \quad 2x + y - z = 7, \quad x + 2y + z = 8$$

6. Solve the following equations by the method of Reductions

$$x + y + z = 9, \quad 2x + 5y + 7z = 52, \quad 2x + y - z = 0$$

7. Solve the following equations, using reduction method :

$$3x + 3y - 4z = 2, \quad x - y + z = 1, \quad 2x - y = 1$$

8. Solve the equations $2x + 5y + 1 = 0$, $x + y = 1$, by inversion method .

9. Solve the following equations . by Reduction Method .

$$2x - y + z = 1, \quad x + 2y + 3z = 8, \quad 3x + y - 4z = 1$$

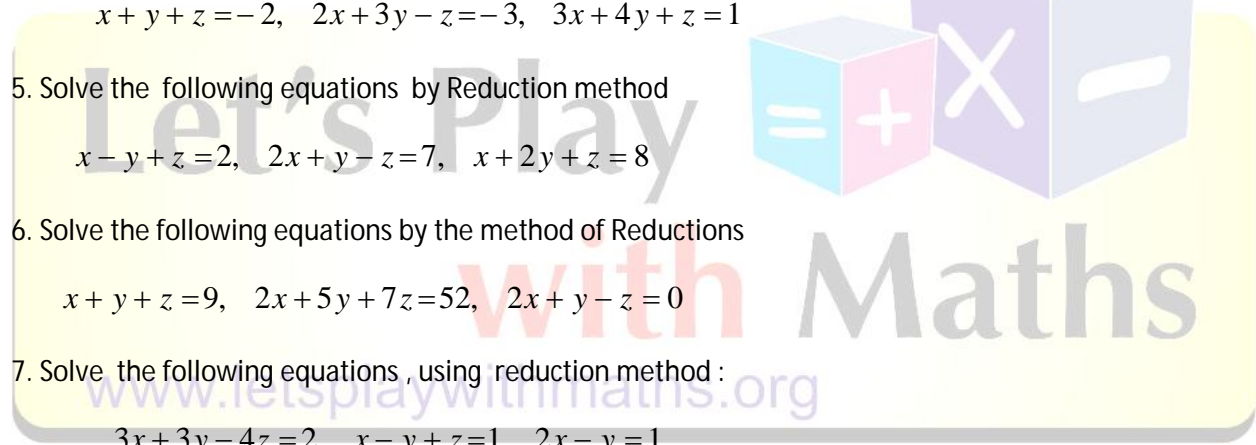
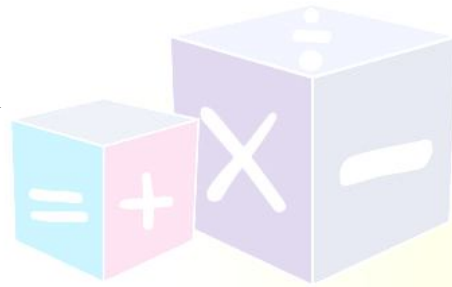
10. Solve the following equations by using matrix reduction method

$$x + y + z = 6, \quad 3x - 2y + 3z = 8, \quad 5x + 5y + z = 18$$

11. The sum of three numbers is 9. If we multiply third number by and add to the second number

We get 16. By adding the first and third number and then subtracting twice the second number

From this sum, we get 6. Use this information and find the system using matrices .



12. The cost of 2 books, 6 notebooks and 3 pens is Rs 40. The cost of 3 books, 4 notebooks and 2 pens is Rs 35, while the cost of 5 books, 7 notebooks and 4 pens is Rs 61. Using this information and matrix method find the cost of 1 book, 1 notebook and 1 pen separately.

13. Express the following equations in the matrix form and solve them by method of reduction :

$$2x - y + z = 1, \quad x + 2y + 3z = 8, \quad 3x + y - 4z = 1$$

14. Solve the following equations by the method of reduction :

$$2x - y + z = 1, \quad x + 2y + 3z = 8, \quad 3x + y - 4z = 1$$

15. The sum of three numbers is 6. When second number is subtracted from thrice the sum of first and third number, we get number 10. Four times the sum of third number is subtracted from five times the sum of first and second number, the result is 3. Using above information, find these three numbers by matrix method.

16. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$ by using elementary row transformations.

17. Find the inverse of $A = \begin{bmatrix} \cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$ using elementary transformation.

18. Find the inverse of the matrix $A = \begin{bmatrix} 6 & 2 & 2 \\ -3 & 7 & 1 \\ 3 & 5 & -1 \end{bmatrix}$ by using the method of adjoint.

19. If $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 0 \end{bmatrix}$ & $B = \begin{bmatrix} 1 & 2 \\ 2 & 1 \\ 0 & 1 \end{bmatrix}$, then find $(AB)^{-1}$

20. If $A = \begin{bmatrix} 4 & 3 & 3 \\ -1 & 0 & -1 \\ -4 & -4 & -3 \end{bmatrix}$, then find A^{-1} by adjoint method.

21. Find the inverse of the following matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 2 & 1 & 2 \end{bmatrix}$ by using Adjoint method

22. Find the inverse of the matrix A , by using elementary transformations, if $A = \begin{bmatrix} 1 & 0 & -1 \\ -2 & -1 & 4 \\ -1 & 0 & 2 \end{bmatrix}$.

24. Find the matrix B , such that $\begin{bmatrix} 4 & 3 \\ 3 & 2 \end{bmatrix} B = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$.

25. Find the inverse of the matrix A by using Adjoint method where $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{bmatrix}$

26. If $A = \begin{bmatrix} 2 & -2 \\ 4 & -3 \end{bmatrix}$ then find A^{-1} by Adjoint method.

27. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $AX = I$, then find X by using elementary transformations.

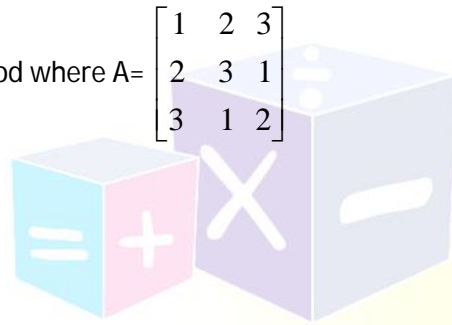
28. $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $A(\text{Adj } A) = KI$, then the value of K is.....

(a) 2

(b) -2

(c) 10

(d) -10



30. The inverse of the matrix $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ is

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(a) $\begin{bmatrix} \frac{1}{2} & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

(b) $\begin{bmatrix} -\frac{1}{2} & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} -1 & 0 & 0 \\ 0 & -\frac{1}{2} & 0 \\ 0 & 0 & \frac{1}{2} \end{bmatrix}$

(d) $-\frac{1}{2} \begin{bmatrix} -\frac{1}{2} & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

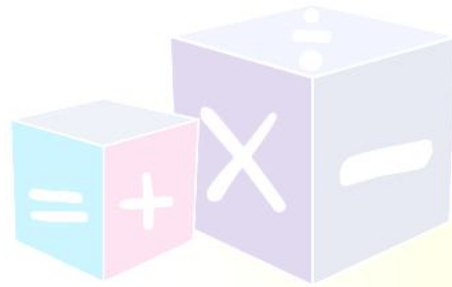
31. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$ then $A^6 = \dots\dots\dots$

(a) 6A

(b) 12A

(c) 16A

(d) 32A



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