

Time 1 h	cbsemath.com	MM 35
1. If $\begin{bmatrix} -1 & 3 & 4 \\ 5 & -1 & 2 \end{bmatrix}$ is additive inverse of $\begin{bmatrix} 2x & -3 & y \\ x+t & -z & 2z \end{bmatrix}$. Find x, y, z and t		3
2. If $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$. Show that $A^2 = \begin{bmatrix} \cos 2\theta & \sin 2\theta \\ -\sin 2\theta & \cos 2\theta \end{bmatrix}$		3
3. If $A = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$ and $A^2 - xA + yI = 0$. Find the value of x and y		3
4. Express $\begin{bmatrix} 6 & 1 & 5 \\ -2 & -5 & 4 \\ -3 & 3 & -1 \end{bmatrix}$ as the sum of skew and skew symmetric matrices.		4
5. $\begin{bmatrix} 0 & x+2 & 2-x \\ 1-2x & 0 & 2x-1 \\ 3x-8 & x-8 & 0 \end{bmatrix}$ is a skew symmetric, find value of x.		4
6. Prove that value of the determinant $\begin{vmatrix} x & \sin \theta & \cos \theta \\ -\sin \theta & -x & 1 \\ \cos \theta & 1 & x \end{vmatrix}$ is independent of θ .		4
7. Solve for x. $\begin{vmatrix} x & -6 & -1 \\ 2 & -3x & x-3 \\ -3 & 2x & x+2 \end{vmatrix} = 0$.		4
8. Find value of x, If matrix A is not invertible. $A = \begin{vmatrix} 4 & -3 & 1 \\ -6 & 7 & -4 \\ 1 & -2 & x \end{vmatrix}$		4
9. Classify the following system of equations as consistent or inconsistent. If consistent solve it. $x - y + 3z = 6$, $x + 3y - 3z = -4$ and $5x + 3y + 3z = 10$		6

Answers

1. $x = \frac{1}{2}, y = -4, z = -1, t = \frac{-11}{2}$

3. $x = 9, y = 14$

$$4. \begin{bmatrix} 6 & \frac{-1}{2} & -4 \\ \frac{-1}{2} & -5 & \frac{7}{2} \\ -4 & \frac{7}{2} & -1 \end{bmatrix} + \begin{bmatrix} 0 & \frac{3}{2} & -1 \\ \frac{-3}{2} & 0 & \frac{1}{2} \\ 1 & \frac{-1}{2} & 0 \end{bmatrix}$$

5. $x = 3$

6. $-x^3$

7. $x = 2, -3, 1$

8. $x = \frac{3}{2}$

9. Consistent.

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