CBSE QUESTIONS

1 Algebra

1. If the matrix $[A] = \begin{bmatrix} 0 & a & -3 \\ 2 & 0 & -1 \\ b & 1 & 0 \end{bmatrix}$ is skew symmetric, Find the values of 'a' and 'b'.

2. If $a * b$ denotes the larger of 'a' and 'b' and if $a \circ b = (a * b) + 3$, then write the value of $(5) \circ (10)$, where $*$ and $\circ$ are binary operations.

3. Given $[A] = \begin{bmatrix} 2 & -3 \\ -4 & 7 \end{bmatrix}$, compute A^{-1} and show that $2A^{-1} = 9I - A$.

4. Using properties of determinants, Prove that

$$\begin{vmatrix} 1 & 1 & 1+3x \\ 1+3y & 1 & 1 \\ 1 & 1+3z & 1 \end{vmatrix} = 9\,(3xyz + xy + yz + zx)$$

5. If $[A] = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find $\mathbf{A}^{-1}$. Use it solve the system of equations

$2x - 3y + 5z = 11$
$3x + 2y - 4z = -5$
$x + y - 2z = -3.$

6. Using elementary row transformations, find the inverse of the matrix

$$[A] = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -2 & -4 & -5 \end{bmatrix}$$