

Matrices - Class XII

Related Questions with Solutions

Questions

Question: 01

The system of equations

$\alpha x + y + z = \alpha - 1, x + \alpha y + z = \alpha - 1, x + y + \alpha z = \alpha - 1$ has no solutions, if α is

- A. either -2 or 1
- B. -2
- C. 1
- D. not -2

Solutions

Solution: 01

The given system of equations can be written as $AX = B$

For no solution $|A| = 0$ and $(\text{adj } A)(B) \neq O$

Now, $|A| = 0$

$$\Rightarrow \alpha^3 - 3\alpha + 2 = 0 \Rightarrow (\alpha - 1)^2(\alpha + 2) = 0$$

$$\Rightarrow \alpha = 1, -2$$

But for $\alpha = 1, |A| = 0$ and $(\text{adj } A)(B) = O$

Also each equation becomes $x + y + z = 0$

\Rightarrow for $\alpha = 1$ there exist infinitely many solution.

Again for $\alpha = -2$

$|A| = 0$ but $(\text{adj } A)(B) \neq O \Rightarrow \exists$ no solution

Correct Options

Answer:01

Correct Options: B