

Three Dimensional Geometry - Class XII

Past Year JEE Questions

Questions

Question: 01

If the plane $2x - y + 2z + 3 = 0$ has the distances $\frac{1}{3}$ and $\frac{2}{3}$ units from the planes $4x - 2y + 4z + \lambda = 0$ and $2x - y + 2z + \mu = 0$, respectively, then the maximum value of $\lambda + \mu$ is equal to :

- A. 13
- B. 9
- C. 5
- D. 15

Solutions

Solution: 01

Explanation

Distance formula

$$(i) \frac{|\lambda - 6|}{\sqrt{16 + 4 + 16}} = \frac{1}{3}$$

$$\Rightarrow |\lambda - 6| = 2$$

$$\Rightarrow \lambda = 8, 4$$

$$(ii) \frac{|\mu - 3|}{\sqrt{4 + 4 + 1}} = \frac{2}{3}$$

$$\Rightarrow |\mu - 3| = 2$$

$$\Rightarrow \mu = 5, 1$$

$$\therefore (\mu + \lambda)_{\max} = 13$$