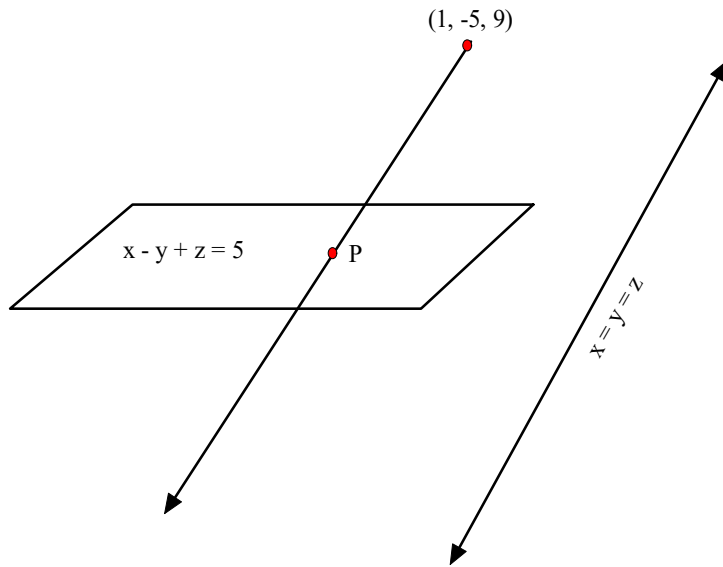


The distance of the point  $(1, -5, 9)$  from the plane  $x-y+z=5$  measured along the line  $x=y=z$  is:

- (1)  $3\sqrt{10}$       (2)  $10\sqrt{3}$       (3)  $\frac{10}{\sqrt{3}}$       (4)  $\frac{20}{3}$

[JEE Main 2016]

**Solution**



Equation of the line passing through  $(1, -5, 9)$  parallel to the line  $x = y = z$  is,

$$\frac{x-1}{1} = \frac{y+5}{1} = \frac{z-9}{1} = \lambda$$

So, any point on the line  $\equiv (\lambda + 1, \lambda - 5, \lambda + 9)$

Let this point be P lying on the plane  $x - y + z = 5$ .

$$\text{So, } \lambda + 1 - (\lambda - 5) + \lambda + 9 = 5$$

$$\therefore \lambda = -10$$

$$\text{So, } P \equiv (-9, -15, -1)$$

$$\text{Now, required distance} = \sqrt{10^2 + 10^2 + 10^2} = 10\sqrt{3} \text{ unit}$$

Hence, Option (2).