Related Questions with Solutions

Questions

Quetion: 01

The equation of the plane which is parallel to the plane x + 5y – 4z + 5 = 0 and the sum of whose intercepts on the co-ordinate axes is 15 units is –

A. $x + 2y - 4z = \frac{300}{19}$

B. $x + 5y + 4z = \frac{300}{19}$

C. $x + 5y - 4z = \frac{300}{19}$

D. $x + 5y - 4z = \frac{30}{19}$

Solutions

Solution: 01

Equation of any plane parallel to the plane x + 5y – 4z + 5 = 0 may be taken as x + 5y – 4z + k = 0 ..... [i]

Or $\frac{x}{-k} + \frac{y}{-k/5} + \frac{z}{k/4} = 1$ $\Rightarrow$ Sum of intercepts on area

$= -k - \frac{k}{5} + \frac{k}{4} = \frac{-19}{20}k$

Given, $\frac{-19}{20}k = 15 \quad \Rightarrow k = -15 \times \frac{20}{19} = \frac{-300}{19}$

..... [ii]

From [i] and [ii], equation of required plane is $x + 5y - 4z = \frac{300}{19}$

Correct Options

Answer:01

Correct Options: C