Related Questions with Solutions

Questions

Quetion: 01

If the distance between the planes $8x + 12y - 14z = 2$ and $4x + 6y - 7z = 2$ can be expressed in the form $\dfrac{1}{\sqrt{N}}$ where N is natural then the value of $\dfrac{N(N+1)}{2}$ is

A. 4950

B. 5050

C. 5150

D. 5151

Solutions

Solution: 01

$$\overline{P_1} \to 8x + 12y - 14z = 2$$
$$P_2 \to 4x + 6y - 7z = 2$$

point $\left(0, 0, -\dfrac{1}{7}\right)$ lie on P_1

Distance of a point and a plane is

$$d = \left|\frac{ax_1 + by_1 + cz_1 + d}{\sqrt{a^2 + b^2 + c^2}}\right|$$

$$= \left|\frac{0 + 0 + 1 - 2}{\sqrt{16 + 36 + 49}}\right|$$

$$\frac{1}{\sqrt{101}} = \frac{1}{\sqrt{N}}$$

N = 101

$$\frac{N(N+1)}{2} = \frac{101 \times 102}{2} = 5151$$

Correct Options

Answer:01

Correct Options: D