

# 4.12.49

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## QUESTION

The planes  $2x - y + 4z = 5$  and  $5x - 2.5y + 10z = 6$  are

(a) Perpendicular

(b) Parallel

(c) intersect y axis

(d) pass through  $(0,0,5/4)$  **solution** we are rewriting the equation of the planes :

$$2x - y + 4z = 5, c_1 = 5; 2x - y + 4z = 2.4, c_2 = 2.4.$$

there normal vectors are same . so we are taking  $n_1$  as normal vector of the planes .

$$n_1 = \begin{pmatrix} 2 \\ -1 \\ 4 \end{pmatrix}$$

as the value of  $c_1$  and  $c_2$  is different and normal vector same means they are different plane but are parallel to each other .

yes they are intersecting y axis:

$$x_1 = 0, z_1 = 0, y_1 = -5.$$

$$x_2 = 0, z_2 = 0, y_2 = -2.4.$$

plane  $2x - y + 4z = 5$  is satisfying the point  $(0,0,5/4)$ .

plane  $2x - y + 4z = 2.4$  is not satisfying the point  $(0,0,5/4)$ .

Planes:  $2x - y + 4z = 5$  and  $5x - 2.5y + 10z = 6$

