

Rectas y Planos en el espacio

Trabajo (laboratorio #1)

Grupo__

NOMBRE: _____

CÈDULA: _____

1. Which of the following is a set of parametric equations for the line through the points $(-3, 2, 0)$ and $(4, 3, 3)$?

(a) $x = 4 + 7t$
 $y = 3 + t$
 $z = 3 + 3t$

(b) $x = 4 - 3t$
 $y = 3 + 2t$
 $z = 3$

(c) $x = -3 + t$
 $y = 2 + 5t$
 $z = 3t$

(d) $x = -3 + 4t$
 $y = 2 + 3t$
 $z = 3t$

(e) None of these

2. Which of the following is a set of parametric equations for the line through the points $(-2, 0, 3)$ and $(4, 3, 3)$?

(a) $x = -2 + 2t$
 $y = t$
 $z = 3 + t$

(b) $x = -2 + 2t$
 $y = 3t$
 $z = 3$

(c) $x = -2 + 2t$
 $y = t$
 $z = 3$

(d) $x = -2 + 4t$
 $y = 3t$
 $z = 3 + 3t$

(e) None of these

let $\mathbf{u} = 3\mathbf{i} - \mathbf{j} - 2\mathbf{k}$, $\mathbf{v} = -2\mathbf{i} - 3\mathbf{j} + 2\mathbf{k}$ and $\mathbf{w} = \mathbf{i} + 2\mathbf{k}$.

3. Calculate $\mathbf{u} \cdot (\mathbf{v} \times \mathbf{w})$.

(a) -30

(b) $-18\mathbf{i} - 6\mathbf{j} - 6\mathbf{k}$

(c) -16

(d) -24

(e) None of these

4. Calculate $\text{proj}_{\mathbf{v}}\mathbf{u}$.

(a) $-\frac{7}{17}$

(b) $\langle \frac{14}{17}, \frac{21}{17}, -\frac{14}{17} \rangle$

(c) $\sqrt{17}$

(d) $\langle 14, 21, -14 \rangle$

(e) None of these

5. Calculate $\cos \theta$ where θ is the angle between \mathbf{u} and \mathbf{v} .

(a) $\frac{-7}{2\sqrt{17}}$

(b) $\frac{-7}{\sqrt{238}}$

(c) $\frac{-13}{\sqrt{238}}$

(d) $\frac{-13}{2\sqrt{17}}$

(e) None of these

6. Write an equation of the plane that contains the line given by $\frac{x}{1} = \frac{y-1}{3} = \frac{z+1}{2}$ and is perpendicular to the line given by $\frac{x-1}{-17} = \frac{y+5}{1} = \frac{z-3}{7}$.

(a) $17x - y - 7z - 6 = 0$

(b) $x + 3y + 2z + 8 = 0$

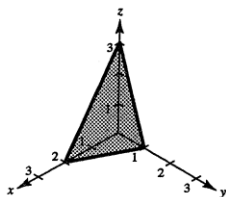
(c) $x + 3y + 2z - 1 = 0$

(d) $17x - y - 7z + 1 = 0$

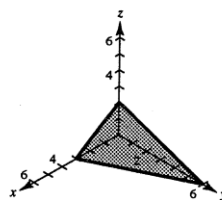
(e) None of these

7. Which of the following is a sketch of the plane given by $2x + y + 3z = 6$?

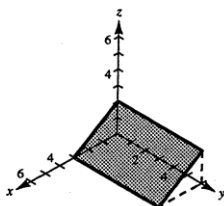
(a)



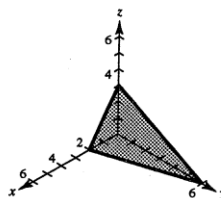
(b)



(c)



(d)



(e) None of these

8. Find an equation of the plane that passes through the points $(2, 1, -4)$, $(-3, 1, 3)$ and $(-2, -1, 0)$.

(a) $2x - 4y + 5z + 10 = 0$

(b) $7x + 6y + 5z + 20 = 0$

(c) $7x - 4y + 5z + 10 = 0$

(d) $7x - 4y + 5z + 2 = 0$

(e) None of these

9. Calcule la distancia entre las rectas:

$$L_1: \frac{x-2}{3} = \frac{y-5}{2} = \frac{z-1}{-1} \quad y \quad L_2: \frac{x-4}{-4} = \frac{y-5}{4} = \frac{z+2}{1}$$

10. Encuentre la distancia del punto dado al plano dado.

$$(-7, 2, -1); -2x + 8z = -5$$

11. Encuentre el ángulo entre los dos planos:

$$\pi_1: x - y + z = 2; \quad y \quad \pi_2: 2x - 3y + 4z = 7$$