

$$\begin{cases} 2x+y-z=11 \\ 2x-y+3z=-11 \\ x-3y+4z=-23 \end{cases}$$

1. Resuelve:

$$\begin{cases} 3x+2y-2z=4 \\ 4x+y-z=7 \\ x+4y-4z=-2 \end{cases} \quad (1,5 \text{ puntos})$$

2. Resuelve:

$$\begin{cases} x-y=8 \\ x^2+y^2=160 \end{cases} \quad (1,5 \text{ puntos})$$

3. Resuelve:

$$\begin{cases} \sqrt{3(x+y)}+x=12 \\ 2x-y=6 \end{cases} \quad (1,5 \text{ puntos})$$

4. Resuelve:

$$\begin{cases} 4x+y \leq 20 \\ y \geq 8 \\ x+2y \geq 12 \end{cases} \quad (1,5 \text{ puntos})$$

5. Resuelve:

$$\begin{cases} 3x-2(x+4) \leq 5 \\ x+3(2x-1) > 4 \end{cases} \quad (1,25 \text{ puntos})$$

6. Resuelve:

$$\begin{cases} -x^2+x+2 > 0 \\ x^2-2+3(x^2-1) \geq 4 \end{cases} \quad (1,25 \text{ puntos})$$

7. Resuelve:

(1)
$$\begin{array}{rcl} 2x + y - z & = & 11 \\ (1.5) \quad 2x - y + 3z & = & -11 \\ x - 3y + 4z & = & -23 \end{array} \quad \left\{ \begin{array}{l} \xrightarrow{E_1 - E_2} \\ E_1 - 2E_3 \end{array} \right.$$

$$\boxed{z = -4}$$
$$2y - 4(-4) = 22 \rightarrow 2y = 22 - 16 \rightarrow 2y = 6$$
$$\boxed{y = 3}$$

$$2x + 3 + 4 = 11 \rightarrow 2x = 4 \rightarrow \boxed{x = 2}$$

Solución $(2, 3, -4)$

$$\begin{array}{l} \textcircled{2} \quad \begin{array}{l} 3x + 2y - 2z = 4 \\ 4x + y - z = 7 \\ x + 4y - 4z = -2 \end{array} \left\{ \begin{array}{l} \xrightarrow{4E_1 - 3E_2} \\ \xrightarrow{E_1 - 3E_3} \end{array} \right. \\ (115) \end{array} \quad \begin{array}{l} 3x + 2y - 2z = 4 \\ 5y - 5z = -5 \\ -10y + 10z = 10 \end{array} \left\{ \begin{array}{l} \xrightarrow{2E_2 + E_3} \\ \xrightarrow{2E_2 + E_3} \end{array} \right. \quad \begin{array}{l} 3x + 2y - 2z = 4 \\ 5y - 5z = -5 \\ 0z = 0 \end{array} \left\{ \begin{array}{l} \\ \\ \text{SCI} \end{array} \right.$$

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

$$3x + 2(-1 + \lambda) - 2\lambda = 4 \Rightarrow 3x - 2 + 2\lambda - 2\lambda = 4 \Rightarrow 3x = 6$$

$$\Rightarrow x = 2$$

Solución $(2, -1+\lambda, \lambda) \quad \forall \lambda \in \mathbb{R}$

(3) $x - y = 8$ $\begin{cases} x = 8 + y \\ (8 + y)^2 + y^2 = 160 \rightarrow 64 + 16y + y^2 + y^2 = 160 \\ 2y^2 + 16y - 96 = 0 \end{cases}$ $\begin{cases} y_1 = 4 \\ y_2 = -12 \end{cases}$

Si $y_1 = 4 \rightarrow x_1 = 8 + 4 = 12$

Si $y_2 = -12 \rightarrow x_2 = 3 - 12 = -9$

(4) $\sqrt{3(x+y)} + x = 12$ $\left\{ \begin{array}{l} y = 2x - 6 \\ 2x - y = 6 \end{array} \right.$

(1,5) $\sqrt{3(x+2x-6)} + x = 12$

$(\sqrt{3(3x-6)})^2 = (12-x)^2$

$9x - 18 = 144 - 24x + x^2$

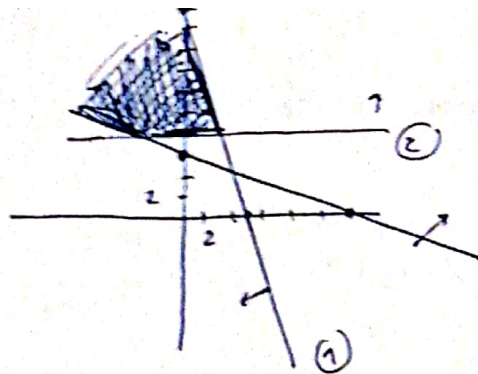
$x^2 - 33x + 162 = 0 \rightarrow x_1 = 27$

$\rightarrow x_2 = 6$

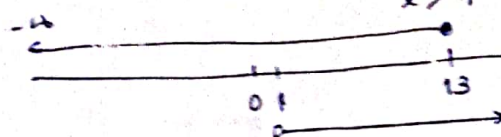
Si $x_1 = 27 \rightarrow y_1 = 2 \cdot 27 - 6 = 48$ $(27, 48)$

Si $x_2 = 6 \rightarrow y_2 = 2 \cdot 6 - 6 = 6$ $(6, 6)$

(5) $\begin{cases} ① 4x + y \leq 20 \\ ② y \geq 8 \\ ③ x + 2y \geq 12 \end{cases}$



(6) $\begin{cases} ① 3x - 2(x+4) \leq 5 \\ ② x + 3(2x-1) > 4 \end{cases}$



Solución $x \in (1, 13]$

(7) $\begin{cases} ① -x^2 + x + 2 > 0 \\ ② x^2 - 2 + 3(x^2 - 1) \geq 4 \end{cases}$

① $-x^2 + x + 2 = -(x-2)(x+1) > 0$

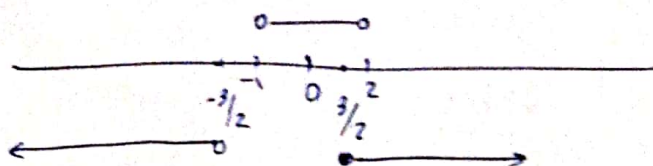
② $x^2 - 2 + 3x^2 - 3 \geq 4 \rightarrow 4x^2 - 9 \geq 0 \rightarrow 4(x - \frac{3}{2})(x + \frac{3}{2}) \geq 0$

①	$-\infty$	-1	2	$+\infty$
$(x-2)$	-	-	+	
$(x+1)$	-	+	+	
Π	-	+	-	

$x \in (-1, 2)$

②	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$(x - \frac{3}{2})$	-	-	+	
$(x + \frac{3}{2})$	-	+	+	
Π	+	-	+	

$x \in (-\infty, -\frac{3}{2}] \cup [\frac{3}{2}, +\infty)$



Solución $x \in [\frac{3}{2}, 2)$