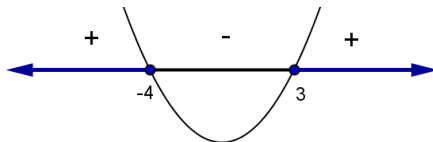


Resuelve las siguientes inecuaciones:

a) $x^2 + x - 12 \geq 0$

➤ Ceros: $x^2 + x - 12 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1+48}}{2} = \frac{-1 \pm 7}{2} = \begin{cases} x=3 \\ x=-4 \end{cases}$

➤ $a=1 > 0 \Rightarrow \cup$

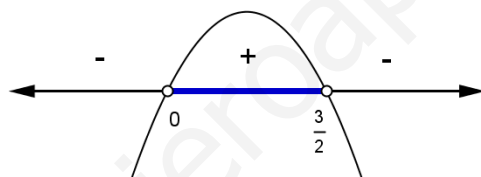


Solución: $x \in (-\infty, -4] \cup [3, +\infty)$

b) $-2x^2 + 3x > 0$

➤ Ceros: $-2x^2 + 3x = 0 \Rightarrow x \cdot (-2x + 3) = 0 \Rightarrow \begin{cases} x=0 \\ -2x+3=0 \Rightarrow x=\frac{3}{2} \end{cases}$

➤ $a=-2 < 0 \Rightarrow \cap$

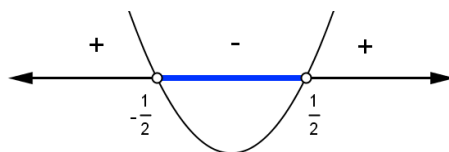


Solución: $x \in \left(0, \frac{3}{2}\right)$

c) $4x^2 - 1 < 0$

➤ Ceros: $4x^2 - 1 = 0 \Rightarrow 4x^2 = 1 \Rightarrow x^2 = \frac{1}{4} \Rightarrow x = \pm \frac{1}{2}$

➤ $a=4 > 0 \Rightarrow \cup$

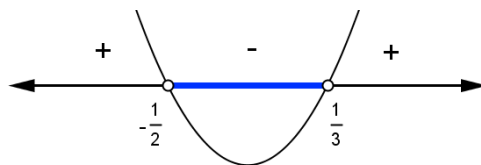


Solución: $x \in \left(-\frac{1}{2}, \frac{1}{2}\right)$

d) $6x^2 + x < 1 \Rightarrow 6x^2 + x - 1 < 0$

➤ Ceros: $6x^2 + x - 1 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1+24}}{12} = \frac{-1 \pm 5}{12} = \begin{cases} x=\frac{1}{3} \\ x=-\frac{1}{2} \end{cases}$

➤ $a=6 > 0 \Rightarrow \cup$

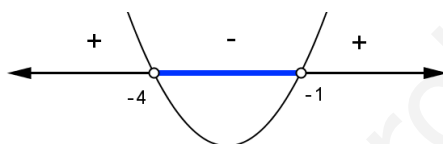


Solución: $x \in \left(-\frac{1}{2}, \frac{1}{3}\right)$

e) $-2x^2 - 10x > 8 \Rightarrow -2x^2 - 10x - 8 > 0 \xrightarrow{:(-2)} x^2 + 5x + 4 < 0$ ¡Cuidado al dividir por un número negativo cambia el sentido de la desigualdad!

➤ **Ceros:** $x^2 + 5x + 4 = 0 \Rightarrow x = \frac{-5 \pm \sqrt{25 - 16}}{2} = \frac{-5 \pm 3}{2} = \begin{cases} x = -1 \\ x = -4 \end{cases}$

➤ $a = 1 > 0 \Rightarrow \cup$

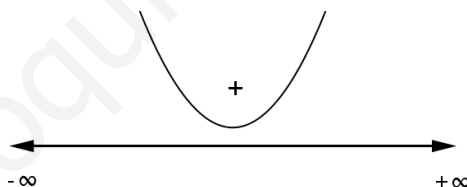


Solución: $x \in (-4, -1)$

f) $2x^2 + x + 1 < 0$

➤ **Ceros:** $2x^2 + x + 1 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1 - 8}}{2} \Rightarrow \nexists$ solución real

➤ $a = 2 > 0 \Rightarrow \cup$

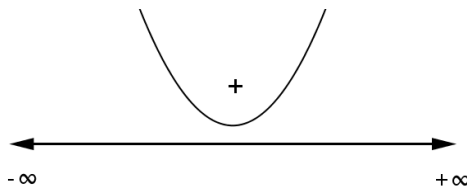


Solución: La inecuación no tiene solución

g) $x^2 + 3x + 9 > 0$

➤ **Ceros:** $x^2 + 3x + 9 = 0 \Rightarrow x = \frac{-3 \pm \sqrt{9 - 36}}{2} \Rightarrow \nexists$ solución real

➤ $a = 1 > 0 \Rightarrow \cup$

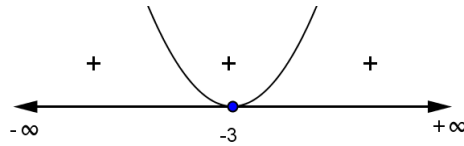


Solución: \mathbb{R}

h) $x^2 + 6x + 9 \leq 0$

➤ Ceros: $x^2 + 6x + 9 = 0 \Rightarrow x = \frac{-6 \pm \sqrt{36 - 36}}{2} = \frac{-6 \pm 0}{2} = \begin{cases} x = -3 \\ x = -3 \end{cases}$

➤ $a = 1 > 0 \Rightarrow \cup$

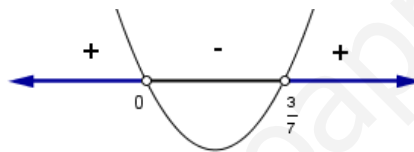


Solución: $x = -3$

i) $7x^2 > 3x \Rightarrow 7x^2 - 3x > 0$

➤ Ceros: $7x^2 - 3x = 0 \Rightarrow x \cdot (7x - 3) = 0 \Rightarrow \begin{cases} x = 0 \\ 7x - 3 = 0 \Rightarrow x = \frac{3}{7} \end{cases}$

➤ $a = 7 > 0 \Rightarrow \cup$

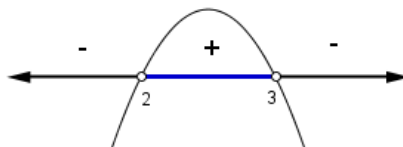


Solución: $x \in (-\infty, 0) \cup \left(\frac{3}{7}, +\infty\right)$

j) $-x^2 + 5x > 6 \Rightarrow -x^2 + 5x - 6 > 0$

➤ Ceros: $-x^2 + 5x - 6 = 0 \Rightarrow x = \frac{-5 \pm \sqrt{25 - 24}}{-2} = \frac{-5 \pm 1}{-2} = \begin{cases} x = 2 \\ x = 3 \end{cases}$

➤ $a = -1 < 0 \Rightarrow \cap$

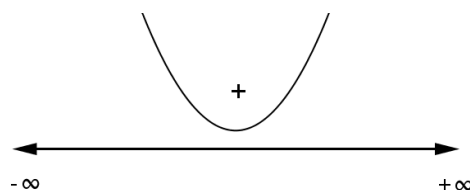


Solución: $x \in (2, 3)$

k) $(x-2)^2 + 5 \leq 2 \Rightarrow x^2 - 4x + 4 + 5 - 2 \leq 0 \Rightarrow x^2 - 4x + 7 \leq 0$

➤ Ceros: $x^2 - 4x + 7 = 0 \Rightarrow x = \frac{4 \pm \sqrt{16 - 28}}{2} \Rightarrow \nexists$ solución real

➤ $a = 1 > 0 \Rightarrow \cup$

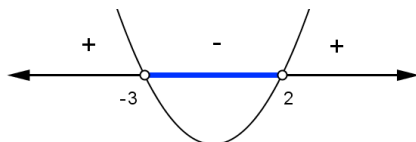


Solución: La inecuación no tiene solución

$$l) \frac{3x-6}{5} < \frac{4x-2x^2}{10} \Rightarrow \frac{2(3x-6)}{10} < \frac{4x-2x^2}{10} \Rightarrow \frac{6x-12}{10} < \frac{4x-2x^2}{10} \Rightarrow 6x-12 < 4x-2x^2 \Rightarrow \\ \Rightarrow 2x^2+2x-12 < 0 \xrightarrow{:2} \underline{x^2+x-6 < 0}$$

$$\text{➤ Ceros: } x^2+x-6=0 \Rightarrow x = \frac{-1 \pm \sqrt{1+24}}{2} = \frac{-1 \pm 5}{2} = \begin{cases} x=2 \\ x=-3 \end{cases}$$

$$\text{➤ } a=1 > 0 \Rightarrow \cup$$

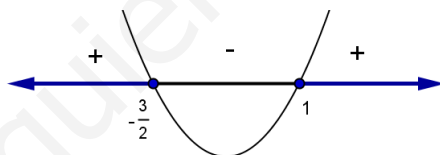


$$\text{Solución: } x \in (-3, 2)$$

$$m) (x-2)^2+3x \geq -1-(x+4)(x-2) \Rightarrow x^2-4x+4+3x \geq -1-(x^2-2x+4x-8) \Rightarrow \\ \Rightarrow x^2-x+4 \geq -1-x^2+2x-4x+8 \Rightarrow x^2-x+4 \geq -x^2-2x+7 \Rightarrow \underline{2x^2+x-3 \geq 0}$$

$$\text{➤ Ceros: } 2x^2+x-3=0 \Rightarrow x = \frac{-1 \pm \sqrt{1+24}}{4} = \frac{-1 \pm 5}{4} = \begin{cases} x=1 \\ x=-\frac{3}{2} \end{cases}$$

$$\text{➤ } a=2 > 0 \Rightarrow \cup$$

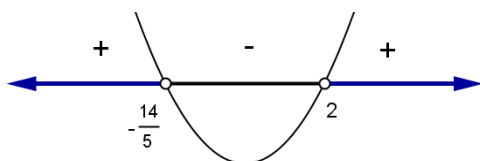


$$\text{Solución: } x \in \left(-\infty, -\frac{3}{2}\right] \cup [1, +\infty)$$

$$n) \frac{x^2-2}{2} - \frac{3x-1}{5} + x > 2 \Rightarrow \frac{5(x^2-2) - 2(3x-1) + 10x}{10} > \frac{20}{10} \Rightarrow \frac{5x^2-10-6x+2+10x}{10} > \frac{20}{10} \Rightarrow \\ \Rightarrow \frac{5x^2+4x-8}{10} > \frac{20}{10} \Rightarrow 5x^2+4x-8 > 20 \Rightarrow \underline{5x^2+4x-28 > 0}$$

$$\text{➤ Ceros: } 5x^2+4x-28=0 \Rightarrow x = \frac{-4 \pm \sqrt{16+560}}{10} = \frac{-4 \pm 24}{10} = \begin{cases} x=2 \\ x=-\frac{14}{5} \end{cases}$$

$$\text{➤ } a=5 > 0 \Rightarrow \cup$$



$$\text{Solución: } x \in \left(-\infty, -\frac{14}{5}\right) \cup (2, +\infty)$$