

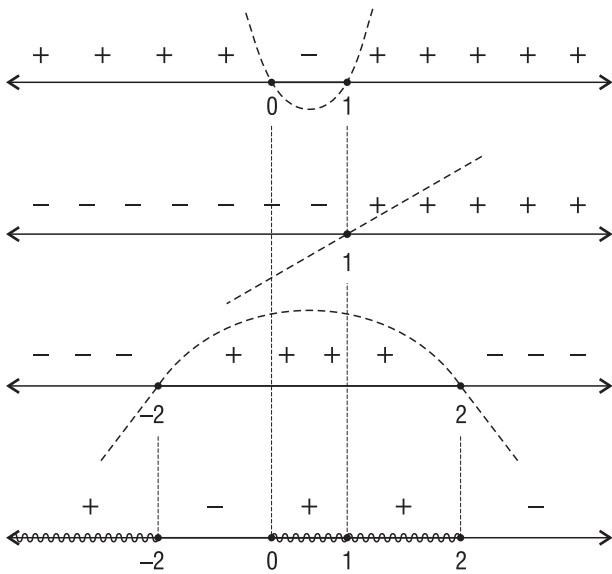
01)  $2(x - A) = 3(x - B)$   
 $2x - 2A = 3x - 3B$   
 $3x - 2x = -2A + 3B$   
 $x = 3B - 2A$

$$x = 3 \begin{pmatrix} 5 & -1 \\ 3 & 4 \end{pmatrix} - 2 \begin{pmatrix} -2 & 2 \\ -3 & 3 \end{pmatrix}$$

$$x = \begin{pmatrix} 15 & -3 \\ 9 & 12 \end{pmatrix} + \begin{pmatrix} 4 & -4 \\ 6 & -6 \end{pmatrix}$$

$$x = \begin{pmatrix} 19 & -7 \\ 15 & 6 \end{pmatrix}$$

02)  $\underbrace{(x^2 - x)}_f \cdot \underbrace{(x - 1)}_g \cdot \underbrace{(-x^2 + 4)}_h \geq 0$



$$S = \{x \in \mathbb{R} / x \leq -2 \text{ ou } 0 \leq x \leq 2\}$$

03) Sistemas equivalentes  $\Rightarrow$  mesma solução:

$$\begin{cases} 2x + y = 5 & (2) \\ 3x - 2y = 18 \end{cases}$$

$$7x = 28$$

$$x = 4$$

$$8 + y = 5$$

$$y = -3$$

$$\begin{cases} 3ax - y = 15 \\ 2ax - by = -7 \end{cases} \Rightarrow \begin{cases} 3a \cdot 4 - 3 = 15 \\ 2a \cdot 4 + 3b = -7 \end{cases}$$

$$\begin{cases} 12a - 3 = 15 \Rightarrow 12a = 18 \Rightarrow a = \frac{3}{2} \\ 2 \cdot \frac{3}{2} \cdot 4 + 3b = -7 \end{cases}$$

$$3b = -7 - 12$$

$$3b = -19$$

$$b = -\frac{19}{3}$$

04)  $\log_{\frac{1}{2}} \left[ 5 + \log_{\frac{1}{2}} \left( x + \frac{7}{4} \right) \right] = -2$

$$5 + \log_{\frac{1}{2}} \left( x + \frac{7}{4} \right) = \left( \frac{1}{2} \right)^{-2}$$

$$5 + \log_{\frac{1}{2}} \left( x + \frac{7}{4} \right) = 4$$

$$\log_{\frac{1}{2}} \left( x + \frac{7}{4} \right) = -1$$

$$\left( \frac{1}{2} \right)^{-1} = x + \frac{7}{4}$$

$$2 = x + \frac{7}{4}$$

$$x = 2 - \frac{7}{4}$$

$$x = \frac{1}{4}$$

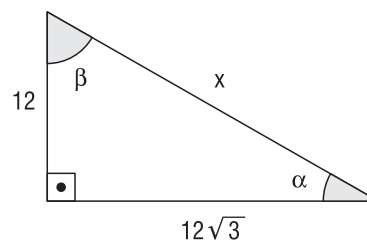
$$S = \left\{ \frac{1}{4} \right\}$$

05) Número de anagramas da palavra SISTEMAS é:

$$P_8^3 = \frac{8!}{3!} = 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 = 6720$$

Resposta: 6720 anagramas.

06)



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

$$x^2 = 144 + 144 \cdot 3$$

$$x^2 = 144 + 432$$

$$x^2 = 576$$

$$x = 24 \text{ (hipotenusa)}$$

$$\text{sen } \alpha = \frac{12}{24} = \frac{1}{2} \rightarrow \begin{matrix} \alpha = 30^\circ \\ \beta = 60^\circ \end{matrix}$$