

nome: Guilherme Mendes Romão

## ATIVIDADE II

① (A)  $A = \{0, 1, 2, 3\}$   $B = \{-3, -1, 0, 1, 3\}$

(a) Pares ordenados de  $A \times B$

$$(0) = (0, -3), (0, -1), (0, 0), (0, 1), (0, 3)$$

$$(1) = (1, -3), (1, -1), (1, 0), (1, 1), (1, 3)$$

$$(2) = (2, -3), (2, -1), (2, 0), (2, 1), (2, 3)$$

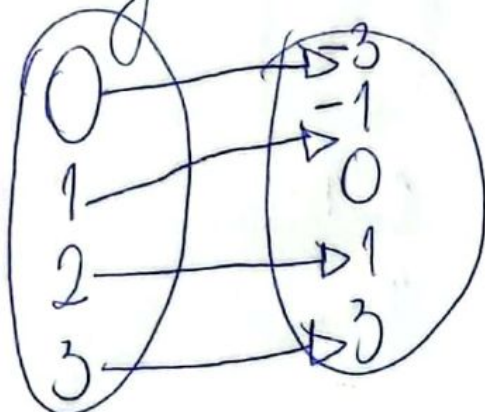
$$(3) = (3, -3), (3, -1), (3, 0), (3, 1), (3, 3)$$

(b) Pares ordenados

$$(0, -3), (1, -1), (2, 1), (3, 3)$$

$$\begin{array}{llll} -3 = 2 \cdot 0 - 3 & -1 = 2(1) - 3 & 1 = 2(2) - 3 & 3 = 2(3) - 3 \\ -3 = -3 \checkmark & -1 = -1 \checkmark & 1 = 1 \checkmark & 3 = 3 \checkmark \end{array}$$

(c) Diagrama de setas de  $R$



(d) Domínio e Imagem de  $R$

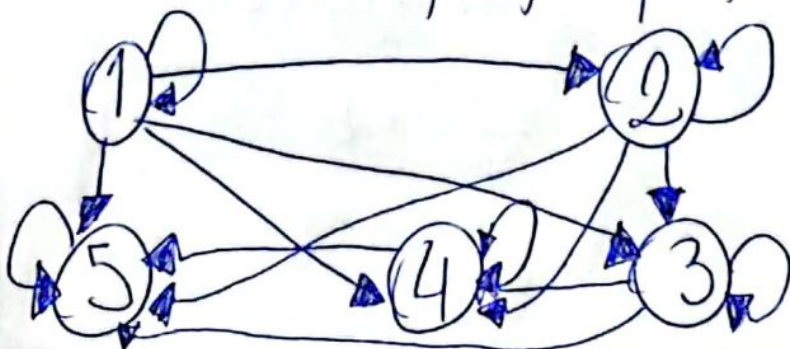
$$\begin{array}{l} \text{Domínio} \\ \text{Imagem de } R \\ \{0, 1, 2, 3\} \end{array}$$

① a relação é uma função, porque todos os elementos de  $\mathcal{D}$  possuem uma imagem.

②  $A = \{1, 2, 3, 4, 5\}$   $R = \{(x, y) \in A^2 \mid x - y \leq 0\}$

$$A^2 = \begin{matrix} (1,1), (1,2), (1,3), (1,4), (1,5) \\ (2,1), (2,2), (2,3), (2,4), (2,5) \\ (3,1), (3,2), (3,3), (3,4), (3,5) \\ (4,1), (4,2), (4,3), (4,4), (4,5) \\ (5,1), (5,2), (5,3), (5,4), (5,5) \end{matrix}$$

$$R = \begin{matrix} (1,1), (1,2), (1,3), (1,4), (1,5) \\ (2,2), (2,3), (2,4), (2,5) \\ (3,3), (3,4), (3,5), (4,4), (4,5) \end{matrix}$$



$$1-1=0$$

$$1-2=-1$$

$$1-3=-2$$

$$1-5=-4$$

$$1-4=-3$$

$$2-2=0$$

$$2-3=-1$$

$$2-4=-2$$

$$2-5=-3$$

$$3-3=0$$

$$3-4=-1$$

$$3-5=-2$$

$$4-4=0$$

$$4-5=-1$$

$$5-5=0$$



$$\textcircled{3} \textcircled{a} 5 - 2x + 2 = 4x - 1 \Leftrightarrow -3x - 4x = -1 - 5 - 2 \Leftrightarrow -7x = -8 \Leftrightarrow x = \frac{-8}{-7(-1)} \Leftrightarrow \boxed{\frac{8}{7}}$$

$$\textcircled{b} 3(2x - 2) + 4(2x + 2) = 5(2x + 3) \Leftrightarrow 6x - 6 + 8x + 8 = 10x + 15 \Leftrightarrow 6x + 8x - 10x = 15 + 6 - 8 \Leftrightarrow 4x = 13 \Leftrightarrow \boxed{x = \frac{13}{4}}$$

$$\textcircled{c} 5 + 3(3 - x) = x - 2(1 - x) \Leftrightarrow 5 + 9 - 3x = x - 2 + 2x \Leftrightarrow -3x - x - 2x = -2 - 5 - 9 \Leftrightarrow -6x = -16 \Leftrightarrow x = \frac{-16}{-6(-1)} \Rightarrow \frac{16}{6} \Leftrightarrow \boxed{\frac{8}{3}}$$

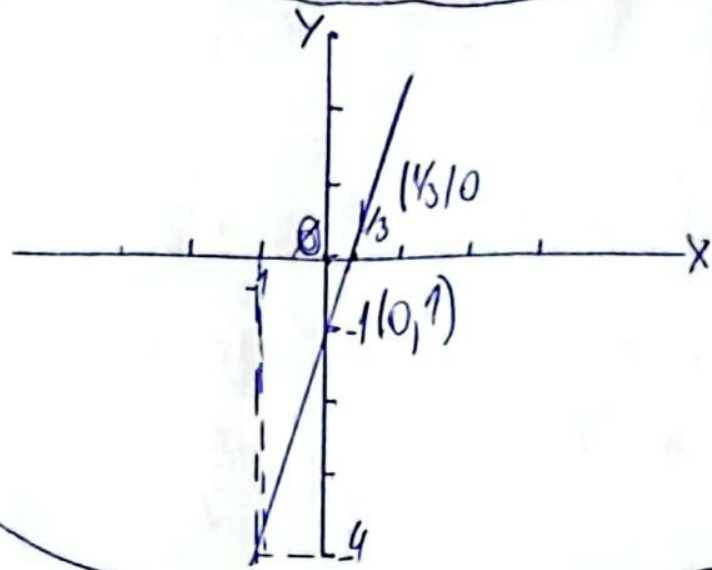
$$\Leftrightarrow \frac{4x - 3x}{12} = \frac{4 - 6}{12} \Leftrightarrow \frac{x}{12} = \frac{-2}{12} \Leftrightarrow \boxed{x = -2}$$

$$\textcircled{4} \frac{x}{8} + \left(\frac{4}{8} \cdot x\right) + 35 = \left(\frac{3}{4} \cdot x\right) + x \Leftrightarrow \frac{1x}{8} + \frac{35}{1} + \frac{x}{1} = \left(\frac{3}{1} \cdot \frac{x}{1}\right) + \frac{x}{1} \Leftrightarrow \frac{1x + 280 + 8x}{8} = \frac{6x + 8x}{8} \Leftrightarrow x + 280 + 8x = 14x \Leftrightarrow 1x + 8x - 14x = -280 \Leftrightarrow 5x = -280 \Leftrightarrow x = \frac{-280}{5} \Leftrightarrow \boxed{x = -56}$$

$$\begin{array}{r|l} 84 & 2 \\ 41 & 2 \\ \hline 42 & 2 \\ 21 & 2 \end{array}$$

5) a)  $y = 3x - 1 \Leftrightarrow 3x - 1 = 0 \Leftrightarrow 3x = 1 \Leftrightarrow x = \frac{1}{3}$

x	3x-1	y
-1	3(-1)-1	-4
0	3(0)-1	-1
$\frac{1}{3}$	3( $\frac{1}{3}$ )-1	0



$y_1 = -\frac{1}{3}x$   
 $11 = 0, -1$   
 $11 = \frac{1}{3} \text{ (C)}$

b)  $y = -0,5x + 2$

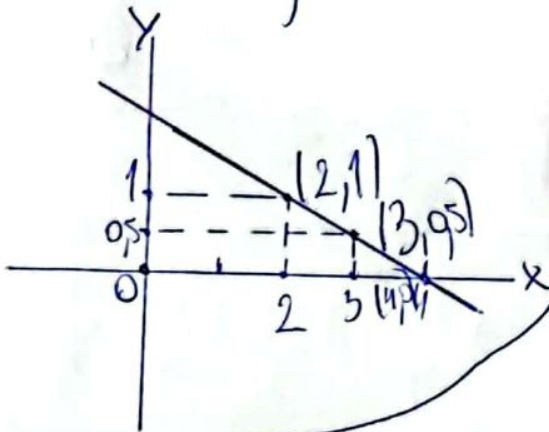
$-0,5x + 2 = 0$

$-0,5x = -2$

$x = \frac{-2}{-0,5} \Rightarrow \frac{2}{0,5} \Rightarrow x = 4$

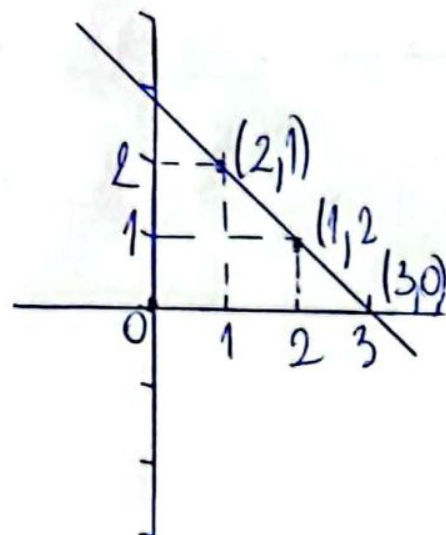
x	-0,5x+2	y
2	-0,5(2)+2	1
3	-0,5(3)+2	0,5
4	-0,5(4)+2	0

$y_1 = (x, y)$   
 $11 = (2, 1)$   
 $11 = (3, 0,5)$   
 $11 = (4, 0)$



c)  $x + 3 \Rightarrow -x + 3 = 0 \Rightarrow -x = -3 \Rightarrow x = 3$

x	-x+3	y	(x, y)
1	-1+3	2	$y_1 = (1, 2)$
2	-2+3	1	$11 = (2, 1)$
3	-3+3	0	$11 = (3, 0)$



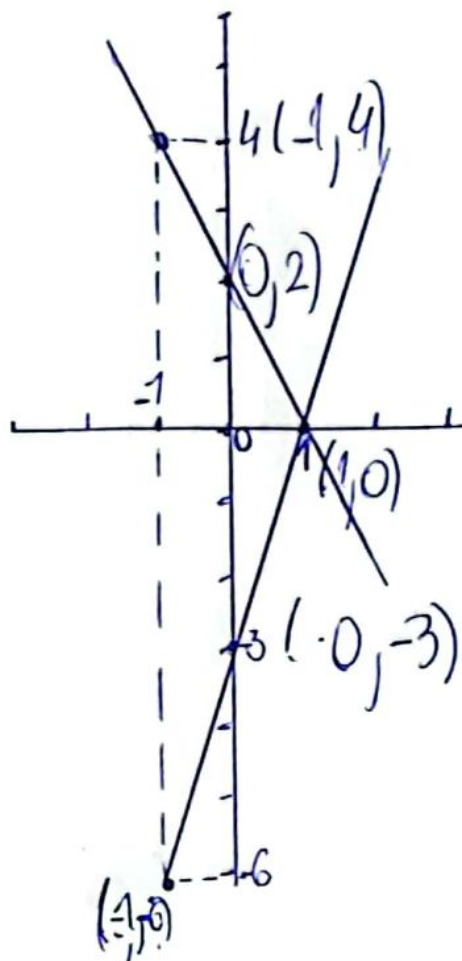


6)  $y_1 = 3x - 3$  e  $y_2 = -2x + 2$

igualar funções  $\Rightarrow 3x - 3 = -2x + 2 \Leftrightarrow$   
 $\Rightarrow 3x + 2x = 2 + 3 \Leftrightarrow$   
 $\Rightarrow 5x = 5 \Leftrightarrow x = \frac{5}{5} \Leftrightarrow$   
 $\Rightarrow x = 1$

$x$	$y_1 = 3x - 3$	$y$	$x$	$y_2 = -2x + 2$	$y$
-1	$3 \cdot (-1) - 3$	-6	-1	$-2 \cdot (-1) + 2$	4
0	$3 \cdot 0 - 3$	-3	0	$-2 \cdot 0 + 2$	2
1	$3 \cdot 1 - 3$	0	1	$-2 \cdot 1 + 2$	0

$y_1 = \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 \\ -6 \end{pmatrix}$      $y_2 = \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$   
 $11 = (0, -3)$      $11 = (0, 2)$   
 $11 = (1, 0)$      $11 = (1, 0)$



6)  $y_1 = -2x + 7$   $y_2 = 4x - 5 \rightarrow$  igualar funções

$$\rightarrow -2x + 7 = 4x - 5 \Leftrightarrow -2x - 4x = -5 - 7$$

$$-6x = -12$$

$$x = \frac{-12}{-6} \Leftrightarrow x = 2$$

$$x = \frac{12}{6} = x = 2$$

$y_1$	$x$	$-2x + 7$	$y$
	0	$-2 \cdot 0 + 7$	7
	1	$-2 \cdot 1 + 7$	5
	2	$-2 \cdot 2 + 7$	3

$y_2$	$x$	$4x - 5$	$y$
	0	$4 \cdot 0 - 5$	-5
	1	$4 \cdot 1 - 5$	-1
	2	$4 \cdot 2 - 5$	3

$$y_1 = (x, y)$$

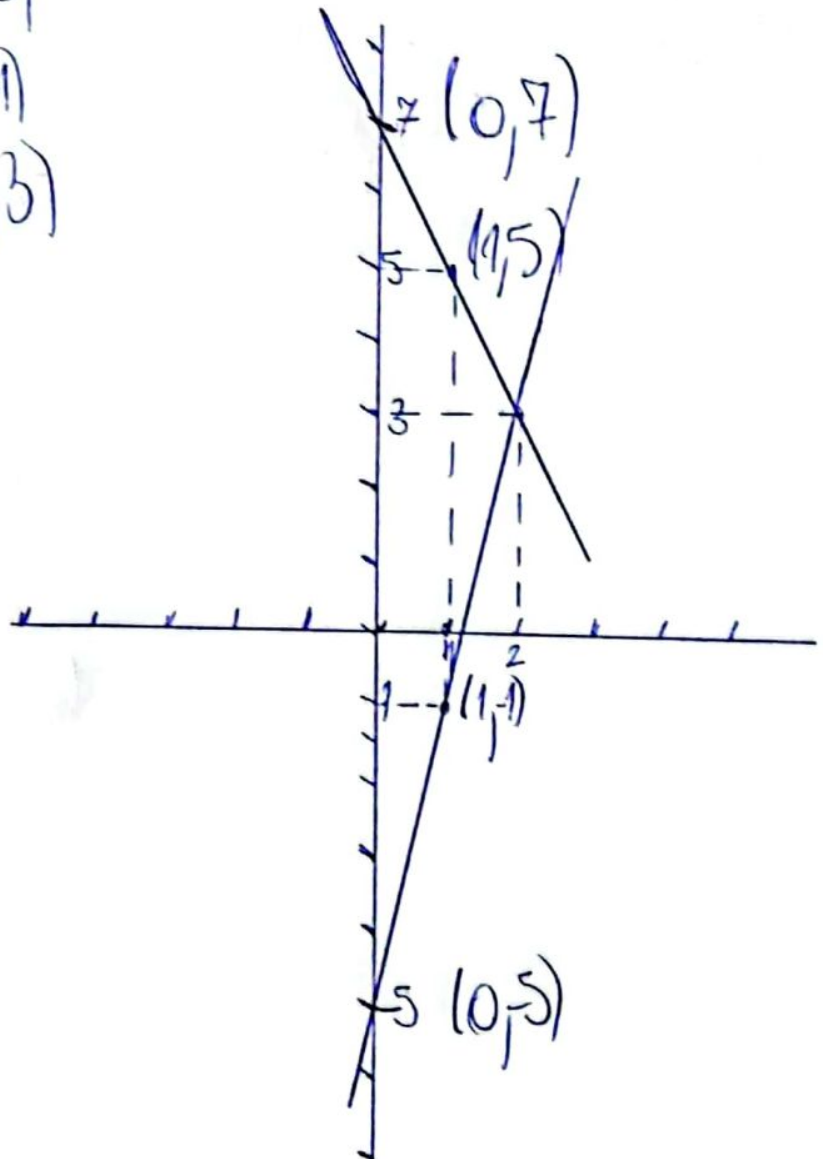
$$11 = 1, 5$$

$$11 = 2, 3$$

$$y_2 = (x, y)$$

$$11 = (1, -1)$$

$$11 = (2, 3)$$



⑦ User trial hours: R\$3,00  
 User Payments: 40h  
 V/ received: 120,00

$h = ?$

$50\% = 1,5$

$V = 1,5 + 3 \Rightarrow 4,50$

$S = 3 \cdot 40 + 4,5 \cdot h$

⑧  $VIA = 3500$   
 $DPA = 300$

$Y_1 = 3500 - (300 \cdot 8)$

$Y_1 = 3500 - 2400$

$Y_1 = 1100,00$

$VIM = 4000$   
 $DPA = 400$

$Y_2 = 4000 - (400 \cdot 8)$

$Y_2 = 4000 - 3200$

$Y_2 = 800,00$

$Y_1 = 3500 - 300x$

$Y_2 = 4000 - 400x$

$3500 - 300x = 4000 - 400x$

$400x - 300x = 4000 - 3500$

$100x = 500$

$x = \frac{500}{100} \Leftrightarrow 5 \Rightarrow x = 5$

y1

X	Y
3	2600
4	2300
5	2000

y2

X	Y
3	2600
4	2400
5	2000

$y_1 = 3, 2600$   
 $y_1 = 4, 2300$   
 $y_1 = 5, 2000$

$y_2 = 3, 2600$   
 $y_2 = 4, 2400$   
 $y_2 = 5, 2000$

