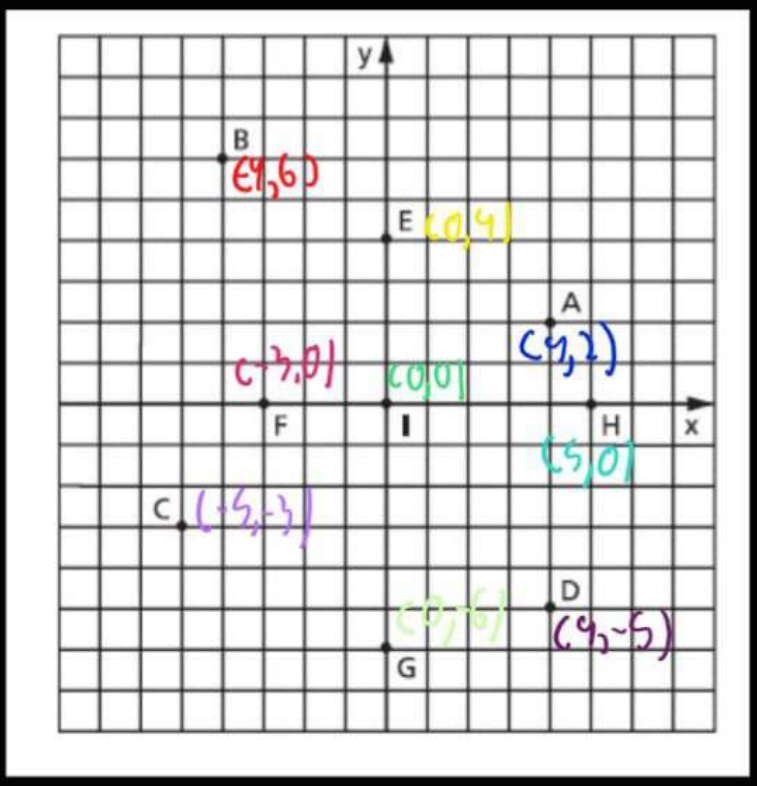
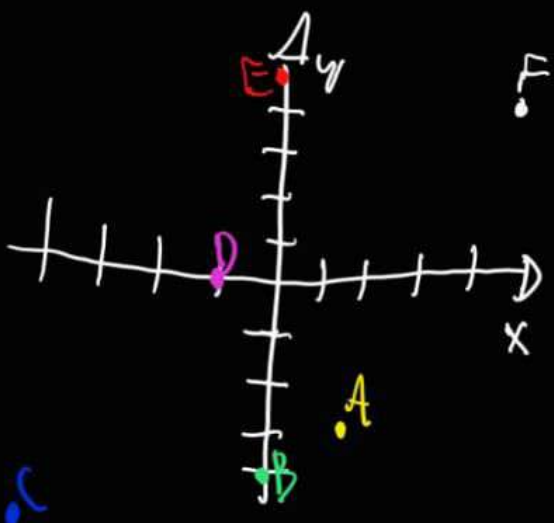
• Exercícios - Relações

7.7.7)



7.7.8)



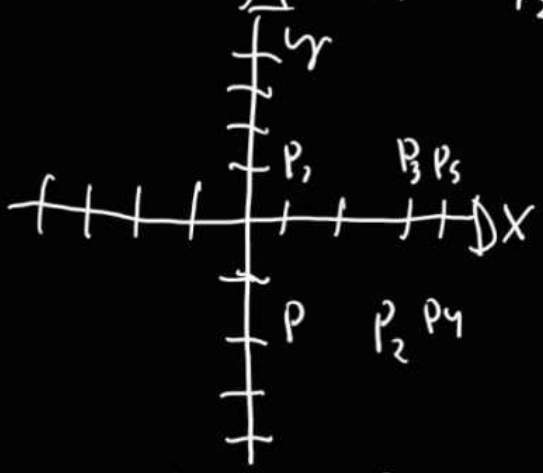
A(2,-3)
B(0,-4)
C(-4,-5)
D(-7,0)
E(0,5)
F(5,4)

• Exercícios - Relações

7) $A = \{1, 3, 7\}$ $B = \{-2, 7\}$ $C = \{-7, 0, 2\}$

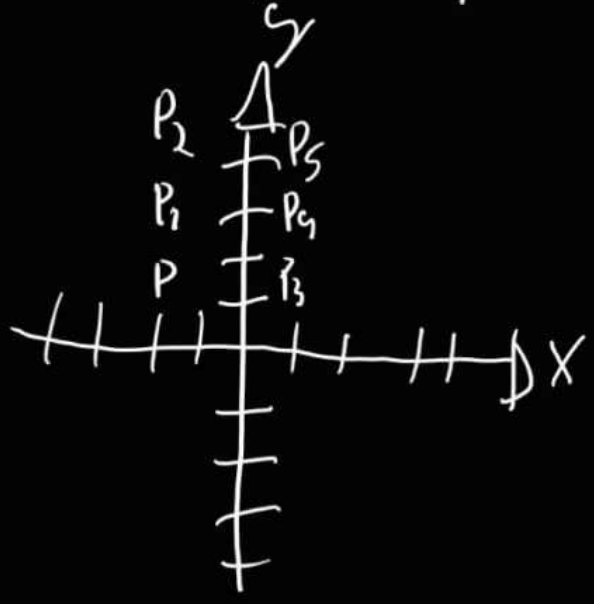
a) $A \times B = \{1, -2\}, \{1, 7\}, \{3, -2\}, \{3, 7\}, \{7, -2\}, \{7, 7\}$

P Δ D_1 P_2 P_3 P_4 P_5

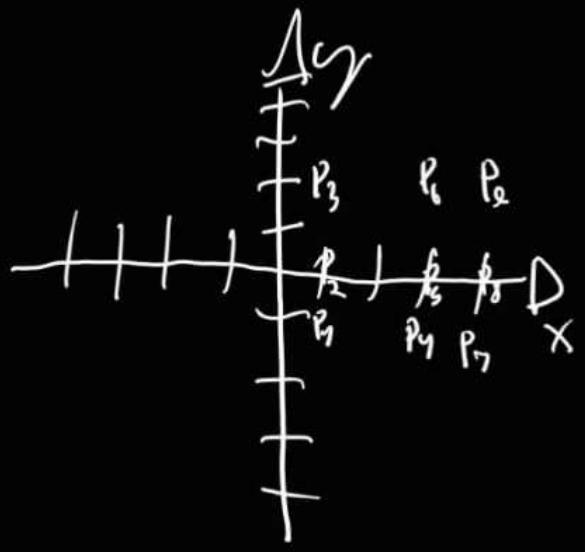


b) $B \times A = \{-2, 1\}, \{-2, 3\}, \{-2, 7\}, \{7, 1\}, \{7, 3\}, \{7, 7\}$

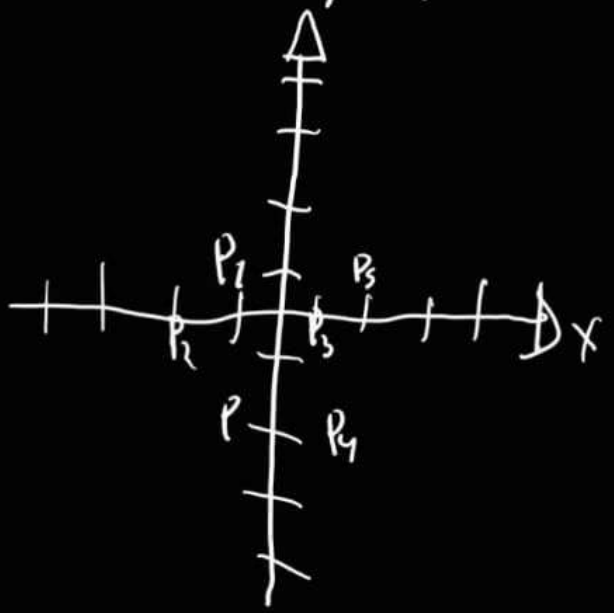
P P_1 P_2 P_3 P_4 P_5



c) $A \times C = \{1,-1\}, \{1,0\}, \{1,2\}, \{3,-1\}, \{3,0\}, \{3,2\}$
$P_1 \quad P_2 \quad P_3 \quad P_4 \quad P_5 \quad P_6$
$\{4,-1\}, \{4,0\}, \{4,2\}$
$P_7 \quad P_8 \quad P_9$



d) $C \times B = \{-1,-2\}, \{-1,1\}, \{0,-2\}, \{0,1\}, \{2,-2\}, \{2,1\}$
$P_1 \quad P_2 \quad P_3 \quad P_4 \quad P_5 \quad P_6$

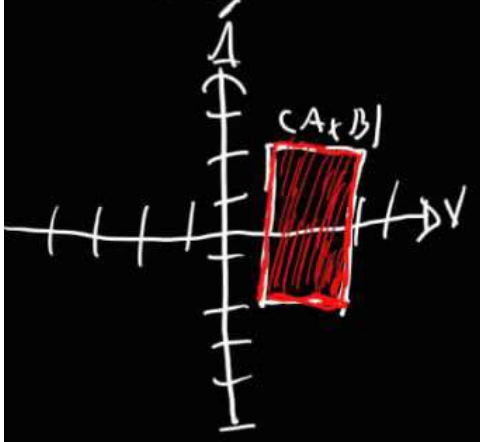


120) $A = \{x \in \mathbb{R} / 1 \leq x \leq 3\}$

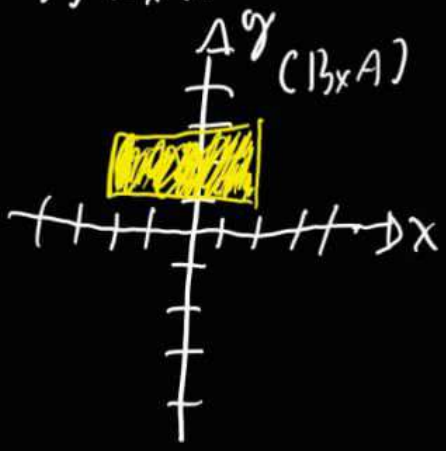
$B = \{x \in \mathbb{R} / -2 \leq x \leq 2\}$

$C = \{x \in \mathbb{R} / -4 < x \leq 1\}$

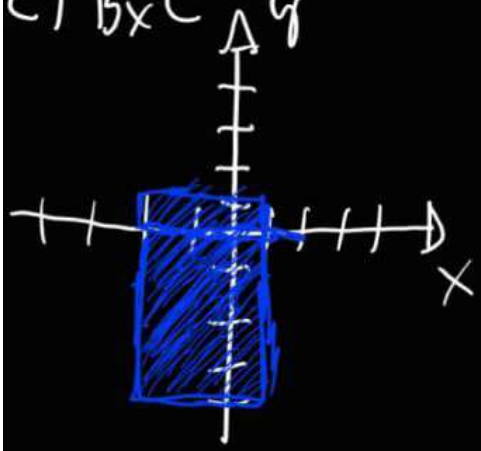
a) $A \times B$:



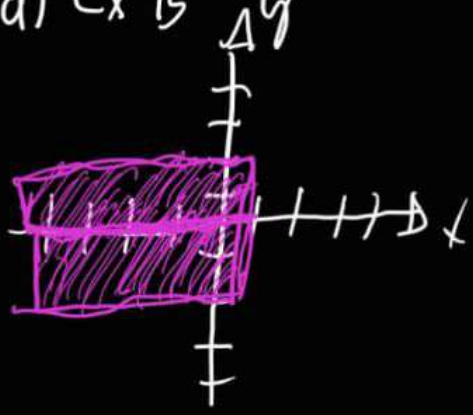
b) $B \times A$



c) $B \times C$

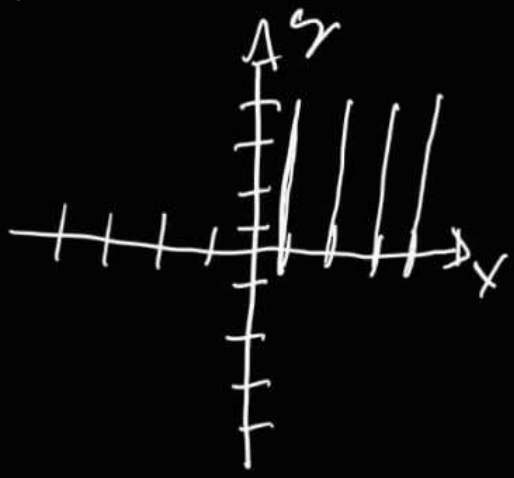


d) $C \times B$

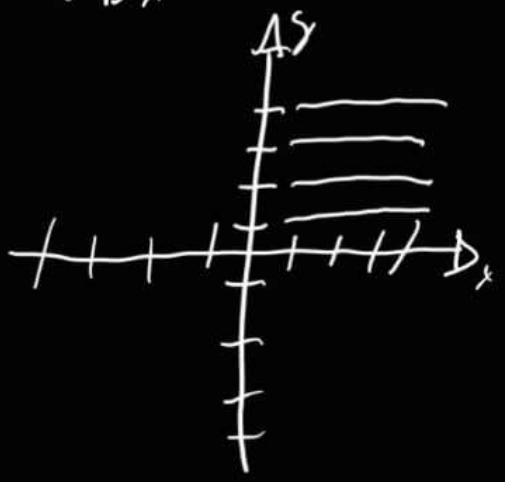


727 / $A = \{1, 3, 3, 9\}$ $B = \{x \in \mathbb{R} \mid 7 \leq x \leq 9\}$

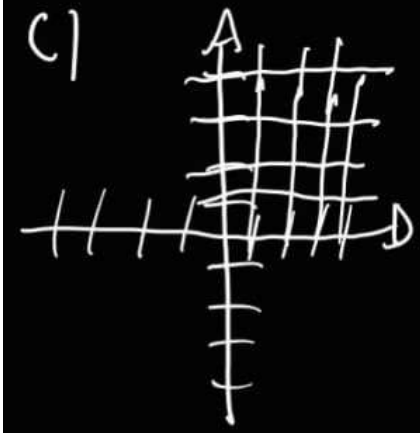
a) $A \times B$



b) $B \times A$



c)



7.2.3) $A \subset B \subset C$ =

$A \times A$ = $A \times A$, $A \times B$, $B \times A$, $A \times C$, $C \times A$, $B \times C$, $C \times B$, $B \times B$, $C \times C$.

$A \times B$ = $A \times B$, $A \times C$, $C \times A$, $B \times C$, $C \times B$, $C \times C$, $B \times B$.

$A \times C$ = $A \times C$, $B \times C$, $C \times C$.

$B \times B$ = $B \times B$, $B \times C$, $C \times B$, $C \times C$.

7.2.4) $S_e \{1, -2\}, (3, 0\} \subset A^2$ e $n(A^2) = 16$

$n(A^2) = [n(A)]^2 = n \cdot (A) \cdot n = 16$

$n(A) = 4$ $A = \{-2, 0, 1, 3\}$

$A \times A = \{-2, -2\}\{-2, 0\}\{-2, 1\}\{-2, 3\}\{0, -2\}\{0, 0\}\{0, 1\}$

$\{0, 3\}\{1, -2\}\{1, 0\}\{1, 1\}\{1, 3\}\{3, -2\}\{3, 0\}\{3, 1\}\{3, 3\}$

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R6) F = {1,2,3,7} G = {3,9,7}

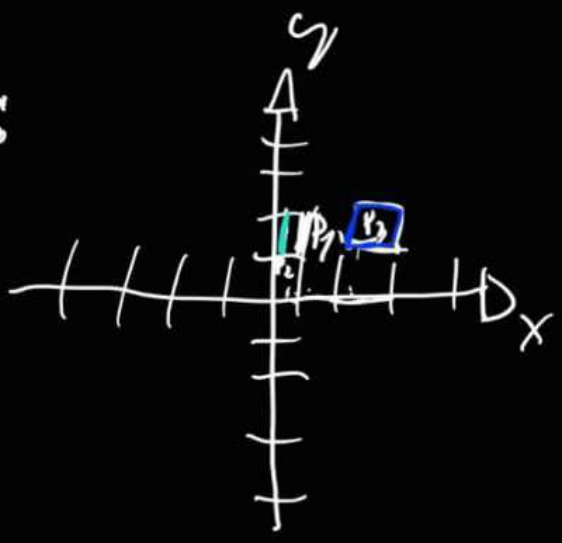
4 × 3 = 12

↳ O número de elementos é 12

R7) $A = \{\frac{1}{1}, \frac{3}{2}\} \cup \{x \in \mathbb{R} / 2 < x < 3\}$

$B = \{x \in \mathbb{R} / 1 \leq x \leq 2\}$

A × B:



$\{\frac{3}{2}, 1 \leq x \leq 2\}$
P_1

$\{\frac{3}{2}, 1 \leq x \leq 3\}$
P_2

$\{2 < x < 3, 1 \leq x \leq 3\}$
P_3

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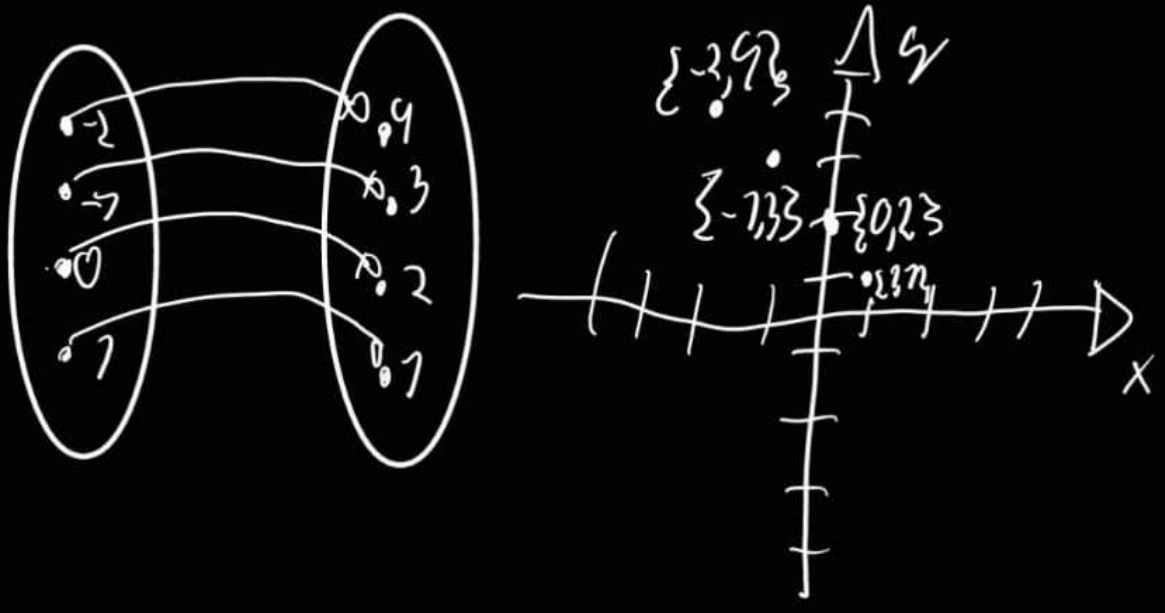
• Exercício - Relação Binária

72 / $A = \{-2, -1, 0, 1, 2\}$

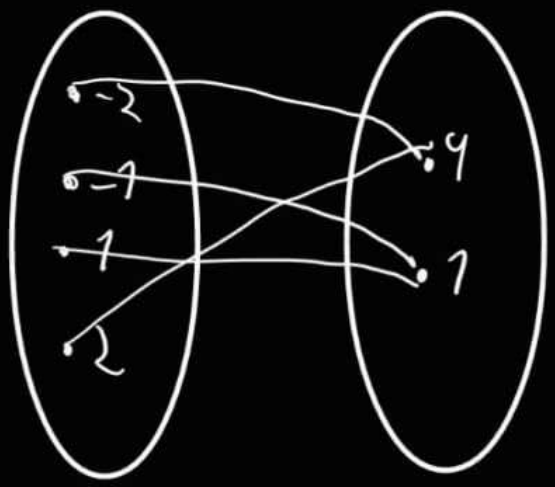
$B = \{-3, -2, -1, 1, 2, 3, 4\}$

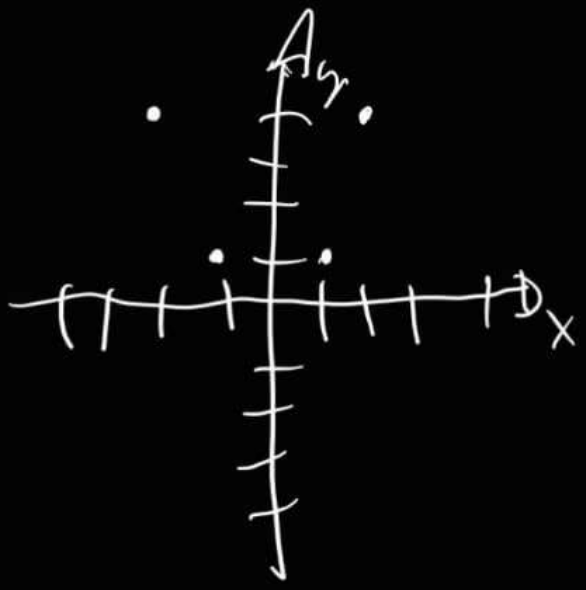
a) $\{-3, 4\}, \{-1, 3\}, \{0, 2\}, \{1, 1\}$



b) $x \mathcal{S} y \Leftrightarrow x^2 = y$

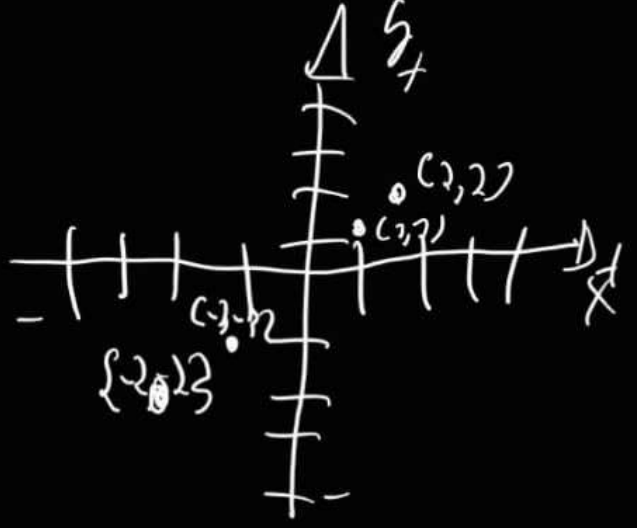
$\{-2, 4\}, \{-1, 1\}, \{1, 1\}, \{2, 4\}$





c) $x \mathcal{T} y \Leftrightarrow |x| = |y|$

$\{-2, -2\}, \{-1, -1\}, \{1, 1\}, \{2, 2\}$



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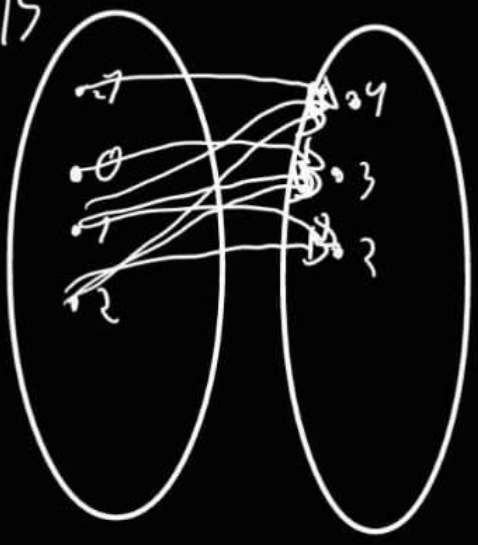
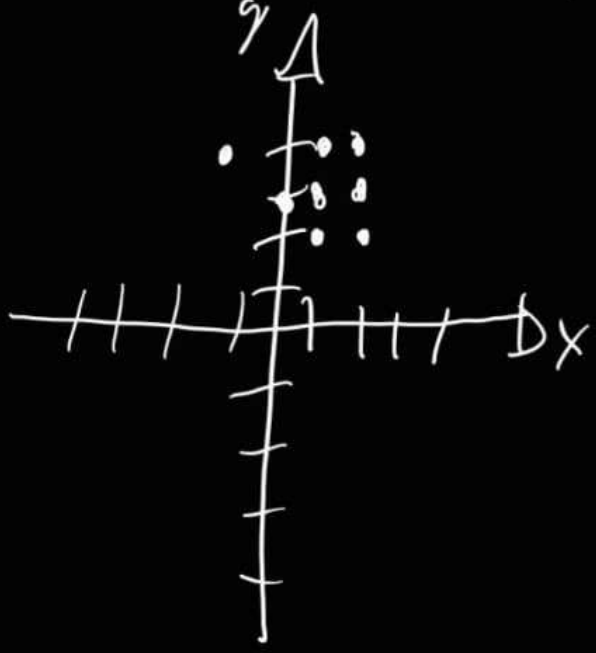
d) $x \vee y \Leftrightarrow x + y > 2$

$\{-7, 9\}, \{0, 3\}, \{1, 2\}, \{3, 2\}, \{2, 1\} \{3, 0\} \{1, 1\} \{1, 0\}$

$\{0, 9\}$



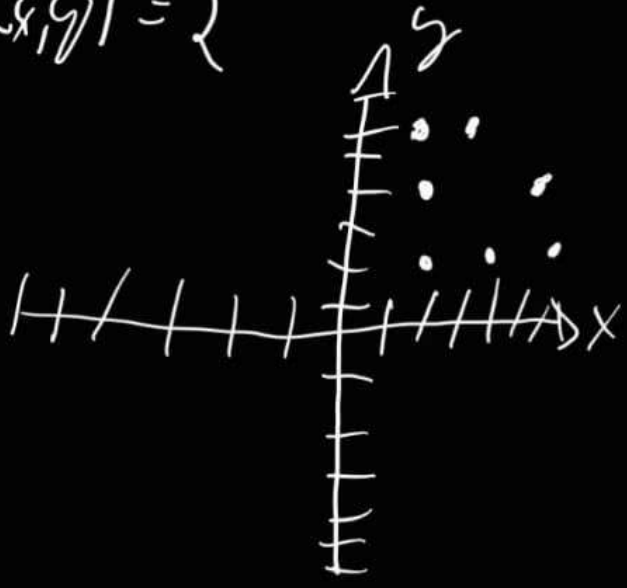


130) $A = \{1, 2, 3, 4, 5, 6\}$

$R = \{(x, y) \in A^2 \mid mdc(x, y) = 2\}$

$R = \{2, 2\}, \{2, 4\}, \{4, 2\}$

$\{6, 2\}, \{6, 4\} \{4, 6\}, \{6, 4\}$



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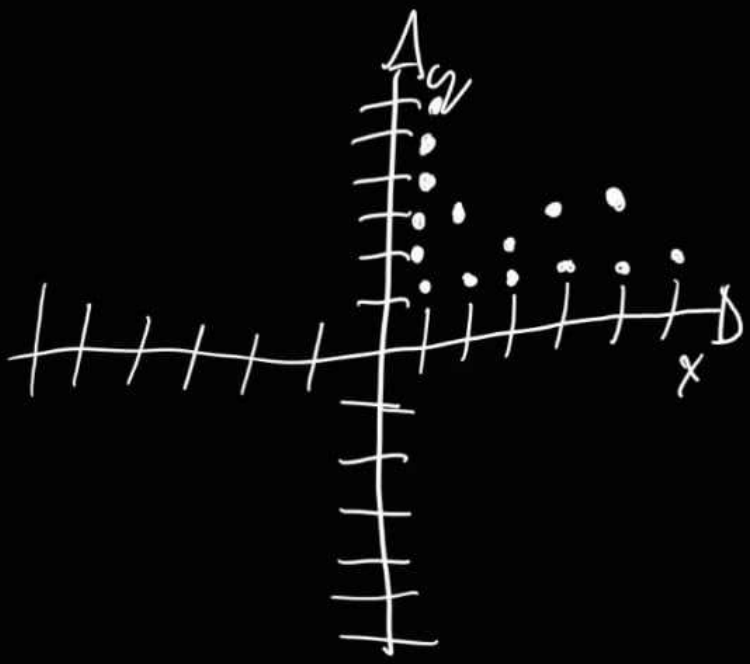
7371 $A = \{1,2,3,4,5,6\}$

$x R y \iff x$ e y não primos entre si

$\{2,3\}, \{2,5\}, \{3,2\}, \{3,5\},$

$\{5,2\}, \{5,3\}, \{1,2\}, \{1,3\} \{1,4\} \{1,5\}$

$\{1,6\}, \{1,1\}, \{3,1\}, \{3,3\}, \{3,3\}, \{4,1\}, \{5,1\} \{6,1\}$



- Exercícios:

7331

a) $\{(1,1),(1,3),(2,4)\}$

$D = \{1,2\}$ $I = \{1,3,4\}$

b) $\{(-2,4),(-1,1),(3,-7),(2,7)\}$

$D = \{-2,-1,2,3\}$ $I = \{-7,1,4,7\}$

c) $\{(2,1),(1,-3),(5,\sqrt{2})\}$

$D = \{5,2,1\}$ $I = \{-3,1,\sqrt{2}\}$

$D=\{5,2,7\}$ $I=\{-3,1,\sqrt{2}\}$

7391

a) $\{-3,7\},\{-1,3\},\{0,2\},\{1,7\}$

$D=\{-3,-1,0,7\}$ $I=\{4,3,2,7\}$

b) $\{-3,4\},\{-1,7\},\{1,7\},\{3,4\}$

$D=\{-3,-1,7,2\}$ $I=\{4,7\}$

c) $\{-3,-2\},\{-1,-1\},\{1,7\},\{3,2\}$

$D=\{-3,-1,7,2\}$ $I=\{-2,-1,7,2\}$