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# 2º Bimestre - Atividade 3

1) $A = \{0, 1, 2\}$ e $R = \{(x, y) \in A \times A \mid x + y < 3\}$

$R = \{(0,0), (0,1), (0,2), (1,0), (1,1), (2,0)\}$ → 6 elementos

2) $A = \{2, 5, 6\}$ e $B = \{1, 2, 3, 4, 6\}$ $R = \{(x, y) \in A \times B \mid x \geq y\}$

$R = \{(2,1), (2,2), (5,1), (5,2), (5,3), (5,4), (6,1), (6,2), (6,3), (6,4), (6,6)\}$

Dom. = $\{2, 5, 6\}$

Cont. Dom. = $\{1, 2, 3, 4, 6\}$

Img = $\{1, 2, 3, 4, 6\}$

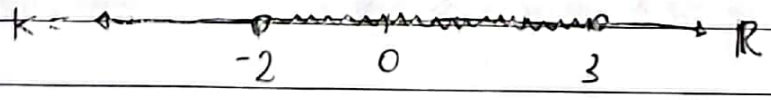
3) Ponto $P = (2k + 4, 3k - 9)$ / 4º quadrante $(x+, y-)$

| 2º | 1º |
|---|---|
| 3º | 4º |

$2k + 4 > 0 \Rightarrow 2k > -4 \Rightarrow k > -2$

$3k - 9 < 0 \Rightarrow 3k < 9 \Rightarrow k < 3$

$R = \{(x, y) \in \mathbb{R} \mid y = 2k + 4,\ y = 3k - 9,\ -2 < k < 3\}$




4) $R = \{(-2, 3), (0, 4), (1, 3), (5, Y)\}$ $A = \{-2, 0, 1, 5\}$

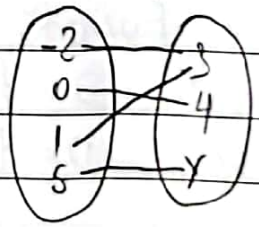
$B = \{3, 4, Y\}$

I - Falso

II - Falso

III - Falso

IV - Verdadeiro

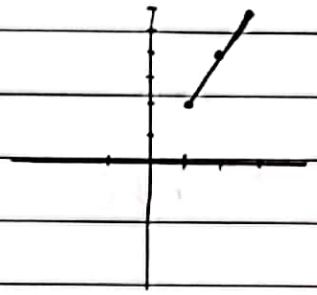


5) $A = \{x \in \mathbb{R} / 1 \leq x \leq 3\}$ e $B = \{x \in \mathbb{R} / 2 \leq x \leq 8\}$

$R = \{(x, y) \in A \times B / y = 2x\}$

$A = \{1, 2, 3\}$ e $B = \{2, 3, 4, 5, 6, 7\}$

se $y = 2x$ então $A \times B = \{(1, 2), (2, 4), (3, 6)\}$



se $1 \leq x \leq 3$ e $y = 2x$ então $2 \leq y \leq 6$

como $B \subset (2 \leq y \leq 6)$ e $A \in \mathbb{R}$ e $B \in \mathbb{R}$.

então a relação representa uma função //

6) $A = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

$R = \{(x, y) \in A \times B / y = \sqrt{x}$ e $x$ é par $/ y = x + 1,$ $x$ é impar$\}$

$R = \{(0, 0), (1, 2), (2, \sqrt{2}), (3, 4), (4, 2), (5, 6), (6, \sqrt{6}), (7, 8), (8, \sqrt{8}), (9, 10)\}$ //

7) $A = \{x \in \mathbb{Z} / -1 < x \leq 2\}$ e $B = \{3, 4, 7\}$

$R = \{(x, y) \in A \times B / y \geq x + 4\}$

$A = \{0, 1, 2\}$ $A \times B = \{(0, 4), (0, 7), (1, 7), (2, 4)\}$

Resposta D // - R tem 4 elementos

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8) $A = \{-2, -1, 0, 3, 4\}$ e $B = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

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

$R = \{(-2, 4), (-1, 1), (0, 0), (3, 9)\}$

$Dom = \{-2, -1, 0, 3\}$
$CONT\ Dom = \{0, 1, 4, 9\}$
$Im = \{0, 1, 4, 9\}$

9) $A = \{x \in \mathbb{R} \mid x \geq 1\}$ $B = \{y \in \mathbb{R} \mid y \geq 2\}$ $f: A \to B$

$f(x) = x^2 - 2x + 3$ então $x^2 - 2x + 3 \geq 2$ p/ $x \geq 1$

$Dom = \{x \in \mathbb{R} \mid x \geq 1\}$
$CONT\ Dom = \{y \in \mathbb{R} \mid y \geq 2\}$
$Im = \{y \in \mathbb{R} \mid y \geq 2\}$

$1^2 - 2 \cdot 1 + 3 = 2$
então $f(x) = x^2 - 2x + 3$ p/ $y \geq 2$

10) $A = \{x \in \mathbb{R} \mid x \geq \frac{5}{4}\}$ $f: A \to \mathbb{R}$ $f(x) = 2x^2 - 5x + 2$

então $2 \cdot (\frac{5}{4})^2 - 5 \cdot (\frac{5}{4}) + 2 =$

$2 \cdot \frac{25}{16} - \frac{25}{4} + 2$

$\frac{50}{16} \quad \frac{25}{4} + 2$

$\frac{50 - 100 + 32}{16} = \frac{-18}{16} = \frac{-9}{8}$

$Dom = \{x \in \mathbb{R} \mid x \geq \frac{5}{4}\}$
$CONT\ Dom = \{y \in \mathbb{R}\}$
$Im = \{y \in \mathbb{R} \mid y \geq -\frac{9}{8}\}$

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ii) $Im_g = \{y \in \mathbb{R} / 5000 \leq y \leq 6000\}$