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

$$B \times B = \{(2,2)(2,3)(3,2)(3,3)\}$$

منها

$$A \times B - B^r = \{(1,2)(1,3)\}$$

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الف: $(3, m^r) = (3, m+2)$ $m+2 = m^r$ $m^r - m - 2 = 0$ $(m-2)/(m+1) = 0 \rightarrow m=2 \times$ $m=-1 \checkmark$

$\therefore (3, m^r) = (3, m+2)$ $m^r = m+2$ $m^r - m - 2 = 0$ $(m-2)(m+1) = 0 \rightarrow m=2 \times$ $m=-1 \times$

به ازای هیچ مقدار تابعی نمی شود

$x=1 \Rightarrow a+b=0$

$x=2 \Rightarrow 2a+b=1$

$2a+b=1$

$a+b=0$

$a=1$

$1+b=0$

$b=-1$

$ab = 1 \times -1 = -1$

if $x=k \Rightarrow 2x-3 = 4-3x$

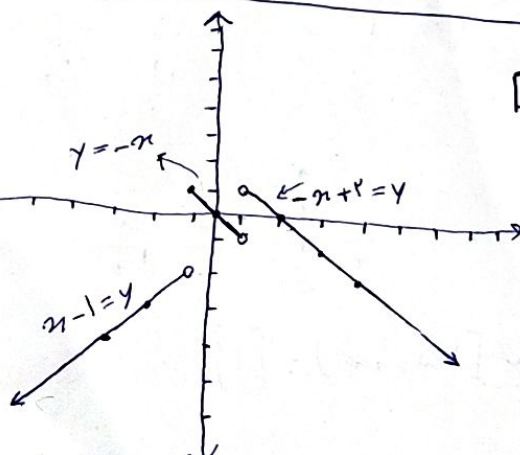
$\Delta x = 7$

$x = \frac{7}{\Delta} = k$

$x > 1 \quad \begin{bmatrix} 1 \\ 1 \end{bmatrix} \begin{bmatrix} 2 \\ 0 \end{bmatrix} \begin{bmatrix} 3 \\ -1 \end{bmatrix}$

$-1 < x \leq 1 \quad \begin{bmatrix} 1 \\ -1 \end{bmatrix} \begin{bmatrix} 0 \\ 0 \end{bmatrix} \begin{bmatrix} -1 \\ 1 \end{bmatrix}$

$x < -1 \quad \begin{bmatrix} -1 \\ -2 \end{bmatrix} \begin{bmatrix} -2 \\ -3 \end{bmatrix} \begin{bmatrix} -3 \\ -4 \end{bmatrix}$



$D_f = \mathbb{R} - \{1\}$

$R_f = (-\infty, 1]$

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الف: $\begin{cases} 2y_1^2 = -x^2 + 1 \\ 2y_2^2 = -x^2 + 1 \end{cases} \Rightarrow y_1 = y_2 \Rightarrow \text{تابع} \checkmark$

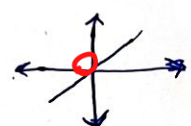
(2)

ب: $x^2 + 4y^2 - 2x - 12y + 10 = 0$

$(x-1)^2 + (2y-3)^2 = 0 \Rightarrow \begin{cases} x-1=0 \\ 2y-3=0 \end{cases} \Rightarrow \begin{cases} x=1 \\ y=\frac{3}{2} \end{cases} \Rightarrow \text{نقطه فقط} \checkmark$
 $\begin{bmatrix} 1 \\ 1.5 \end{bmatrix} \checkmark \text{تابع}$

الف: مثال نقض if $x=0$ $0 \times \sin y = 0 \times y$ y هر چیزی $\checkmark$ تابع x

ب: $\left(\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}}\right)^2 = 4 \Rightarrow \frac{x}{y} + \frac{y}{x} + 2 = 4 \Rightarrow \frac{x^2 + y^2}{xy} = 2 \Rightarrow x^2 + y^2 - 2xy = 0$

$(x-y)^2 = 0 \Rightarrow x=y \checkmark$


الف: $\frac{x-1}{x-3} \geq 0 \quad \frac{2-x}{x} \geq 0 \quad + \frac{1}{0} - \frac{3}{0} + \cap - \frac{0}{0} + \frac{2}{0} - = (0, 1] \checkmark$

$y = 4 - x - 2\sqrt{3x}$

(1.5)

$(\sqrt{y}-1)(\sqrt{3}-\sqrt{x})^2 \quad y-1 = 3-x \quad 2\sqrt{3x} \quad \sqrt{3}-\sqrt{x} \geq 0 \quad D_f = [0, +\infty)$
 $x \leq 3 \quad D = [0, 3]$

الف: $\begin{cases} x^2 - 7x + 9 \geq 0 \\ -9x + 19 \geq 0 \end{cases} \Rightarrow \begin{cases} (x-9)(x-1) \geq 0 \\ 19 \geq 9x \end{cases} \Rightarrow \begin{cases} x \leq 9 \\ x \geq \frac{19}{9} \end{cases}$
 $\frac{1}{0} - \frac{9}{0} + \cap = (-\infty, 1] \checkmark$

ب: $\frac{x^2 - 7x + 9}{x^2 - 10x + 19} \geq 0 \quad \frac{(x-9)(x-1)}{(x-1)(x-2)} \geq 0 \Rightarrow \frac{1}{0} - \frac{9}{0} + \frac{9}{0} - \frac{1}{0} + \cap = [9, +\infty) \checkmark$
 $D_f = (-\infty, 1] \cup (2, 9] \cup (1, +\infty)$

الف: $\begin{cases} 2x^2 - 5x + 3 \geq 0 \\ 3x^2 - 7x + 4 \geq 0 \end{cases} \Rightarrow \begin{cases} x = \frac{3}{2} \\ x = 1 \\ x = \frac{4}{3} \end{cases}$
 $\frac{1}{0} - \frac{5}{0} + \frac{3}{0} - \frac{1}{0} + \cap = D_f = (-\infty, 1) \cup [1.5, +\infty)$

ب: $\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4} \geq 0 \Rightarrow \frac{1}{0} - \frac{5}{0} + \frac{3}{0} - \frac{1}{0} + \cap = D_f = (-\infty, \frac{4}{3}) \cup [1.5, +\infty) - \{1\} \checkmark$

$D_f = (-\infty, \frac{4}{3}) \cup [1.5, +\infty) - \{1\} \checkmark$