

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

①

✓

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

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

$$\text{الف) } f(x) = \{(3, m^2)(2, 1)(-3, m)(-2, m)(3, m+2)(m, 4)\}$$

②

$$(3, m^2) = (3, m+2) \rightarrow m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \Rightarrow (m+1)(m-2) = 0 \Rightarrow m = \begin{cases} -1 \text{ --- } \text{غلط} \\ 2 \text{ --- } \text{غلط} \end{cases}$$

$$\Rightarrow m = -1$$

$$(2, 1) \neq (2, 4)$$

$$\text{ب) } g(x) = \{(3, m^2)(2, 1)(m, 4)(3, m+2)(-2, m)(-1, 2)\}$$

$$(3, m^2) = (3, m+2) \rightarrow m^2 = m+2 \rightarrow (m-2)(m+1) = 0 \Rightarrow m = \begin{cases} -1 \text{ --- } \text{غلط} & (-1, 4) \neq (-1, 3) \\ 2 \text{ --- } \text{غلط} & (2, 1) \neq (2, 4) \end{cases}$$

$$m = \text{جوابی ندارد}$$

$$f(x) = \begin{cases} x^2 - 1 & ; x < 1 \\ ax + b & ; 1 \leq x < 2 \\ x^2 & ; x \geq 2 \end{cases}$$

$$\begin{aligned} \text{If } x=1, \quad x^2 - 1 &= ax + b \rightarrow a + b = 0 \rightarrow b = -a \\ \text{If } x=2, \quad x^2 &= ax + b \rightarrow 2a + b = 4 \end{aligned}$$

$$a \times b = 1 \times (-1) = -1$$

$$f(x) = \begin{cases} 2x - 3 & ; x \geq 1 \\ 5 - 2x & ; x \leq 1 \end{cases}$$

$$\text{If } x=k, \quad 2k - 3 = 5 - 2k \rightarrow 2k - 3 = 5 - 2k$$

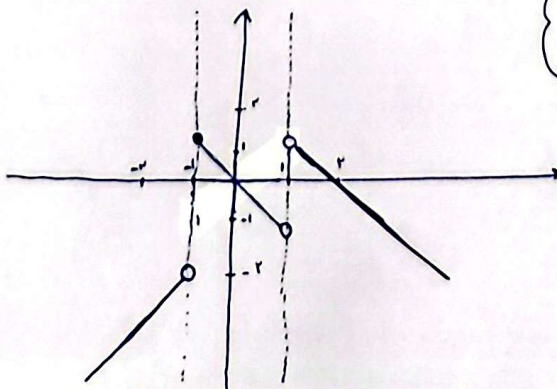
$$a \cdot k = v$$

$$k = \frac{v}{a} = 1/5$$

$$f(x) = \begin{cases} -x + 2 & ; x > 1 \\ -x & ; -1 \leq x < 1 \\ x - 1 & ; x < -1 \end{cases}$$

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

$$R_f = (-\infty, +\infty)$$



(۶)

الف) $2y^3 + x^2 + 1 = 0$ $\xrightarrow{\text{باعدار اول به آن می رسد}}$ $\text{if } (x, y_1) \in f$
 $\text{ضابطه یک نقطه یا تپی}$ $\Rightarrow \text{if } (x, y_2) \in f \Rightarrow y_1 = y_2$
 $\Rightarrow \begin{cases} 2y_1^3 = -x^2 - 1 \\ 2y_2^3 = -x^2 - 1 \end{cases} \Rightarrow 2y_1^3 = 2y_2^3 \rightarrow y_1 = y_2$ تابع است ✓

ب) $x^2 + 4y^2 - 2x - 12y + 10 = 0$ $\xrightarrow{\text{تکمیل مربعی}}$ $(x^2 - 2x + 1) + (4y^2 - 12y + 9) = 0$

(۲)

$\Rightarrow (x-1)^2 + (2y-3)^2 = 0$ $\xrightarrow{\text{جمع دو مربعیت}}$ $\begin{cases} x=1 \\ y=\frac{3}{2} \end{cases}$ تابع یک نقطه است ✓
 هر دو صفر شوند.

(۷)

الف) $x \sin y = y \sin x$ $\xrightarrow{\text{if } x=0}$ $y \sin 0 = 0$ $\rightarrow y, x=0$ به ازای $y, x=0$ $\Rightarrow$ تابع نیست ✓
 هر دو صفر می شوند یا یک

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$ $\xrightarrow{\text{توان ۲}}$ $\frac{x}{y} + \frac{y}{x} + 2 = 4 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 - 2xy = 0$ (۲)

$\Rightarrow (x-y)^2 = 0 \rightarrow x=y$ تابع است ✓
 البته برای x, y نمی تواند صفر باشند.

الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{3-x}{x}}$ (۳)

$\frac{1}{+} \frac{3}{-} \frac{0}{0} \frac{2}{+}$
 $I = (-\infty, 1] \cup [3, +\infty)$

$\frac{0}{-} \frac{2}{+} \frac{0}{-}$
 $II = (0, 2]$

(۱)

$\Rightarrow I \cap II = (0, 1] = Df$ ✓

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3}$ $\xrightarrow{\text{توان ۲}}$ $x + y - 1 + 2\sqrt{x(y-1)} = 3$ $\rightarrow x + y = 4 - 2\sqrt{x(y-1)}$

~~$y = x + 2 - 2\sqrt{x}$
 $x > 0$
 $Df = [0, +\infty)$~~

~~$-y + 1 = 3 + x - 2\sqrt{x(y-1)}$
 $y - 1 = 4 + x - 2\sqrt{x(y-1)}$~~

(۲)

$\sqrt{y-1} = \sqrt{3} - \sqrt{x}$ $\rightarrow \sqrt{3} - \sqrt{x} \geq 0$
 هر دو از صفر بزرگتر یا مساوی باشند

$\sqrt{x} \rightarrow x \geq 0$ I

$\sqrt{3} \geq \sqrt{x} \rightarrow 3 \geq x$ II

$I \cap II = Df = [0, 3]$ ✓

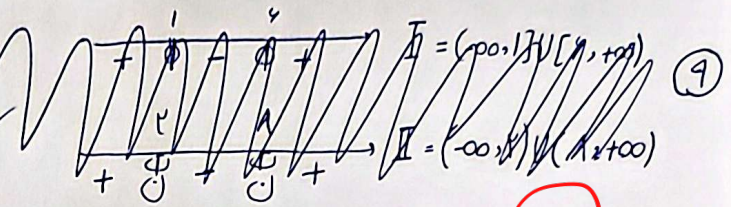
یازدهم سیر B

معین نصیری

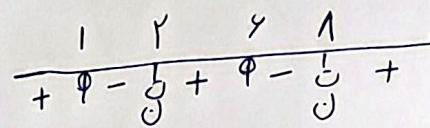
تکلیف شماره 1

$$y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x^2 - 10x + 16}} \rightarrow y = \frac{\sqrt{(x-1)(x-6)}}{\sqrt{(x-2)(x-4)}}$$

$$I = (-\infty, 1] \cup (1, +\infty) \quad II = (2, 4) \cup (4, +\infty) \quad D_f = I \cap II$$



ب) $y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x^2 - 10x + 16}} \rightarrow y = \frac{\sqrt{(x-1)(x-6)}}{\sqrt{(x-2)(x-4)}}$



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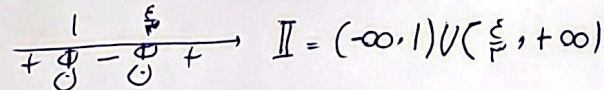
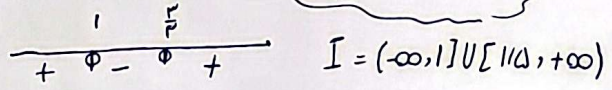
$D_f = (-\infty, 1] \cup (2, 4) \cup (4, +\infty)$

✓

$ax^2 + bx + c = 0$
 $\Delta = b^2 - 4ac = 0 \rightarrow x = 1, \frac{c}{a}$

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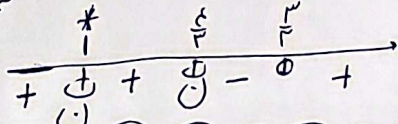
الف) $y = \frac{\sqrt{2x^2 - 5x + 2}}{\sqrt{2x^2 - 7x + 4}}$



$D_f = I \cap II = (-\infty, 1) \cup (\frac{4}{3}, +\infty)$

✓

ب) $y = \frac{\sqrt{2x^2 - 5x + 2}}{\sqrt{2x^2 - 7x + 4}}$

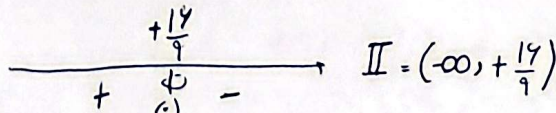
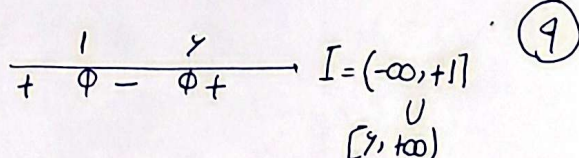


$D_f = (-\infty, \frac{4}{3}) \cup (\frac{4}{3}, +\infty) - \{1\}$

✓

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الف) $y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x^2 - 10x + 16}} = y = \frac{\sqrt{(x-1)(x-6)}}{\sqrt{9(-x + \frac{16}{9})}}$



$D_f = I \cap II = (-\infty, 1]$

✓

ب) $y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x^2 - 10x + 16}}$ در نظر بگیرید