

19,50

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

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

$$5 \quad \text{الف)} \quad m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \Rightarrow a + c = b \Rightarrow m = -1, \quad m = 2x \Rightarrow m = -1$$

باجیت $\rightarrow (2,4), (2,1)$

$$\text{ب)} \quad m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \Rightarrow m = -1, m = 2x \Rightarrow \text{در ازای هیچ مقدار } m \text{ رابطه تابع}$$

باجیت $\rightarrow (-1,3), (-1,4)$

بجیت

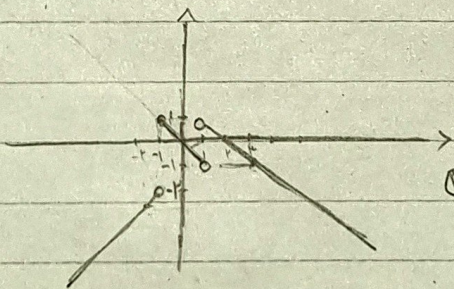
$$10 \quad x=1 \rightarrow 1-1 = a+b \Rightarrow a+b=0$$

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

$$a = 1 \Rightarrow b = -1 \Rightarrow ab = -1$$

$$15 \quad x=K \rightarrow 2K-3 = 4-3K \Rightarrow 5K=7 \Rightarrow K = \frac{7}{5}$$

$$f(x) = \begin{cases} -x+2 & ; x > 1 \quad ① \\ -x & ; -1 \leq x < 1 \quad ② \\ x-1 & ; x < -1 \quad ③ \end{cases}$$



$$① \rightarrow \begin{array}{c|cc} x & 1 & 3 \\ \hline & 1 & -1 \end{array}$$

$$② \rightarrow \begin{array}{c|ccc} x & 1 & 0 & -1 \\ \hline & 1 & 0 & 1 \end{array}$$

$$③ \rightarrow \begin{array}{c|cc} x & -1 & -2 \\ \hline & -1 & -3 \end{array}$$

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

$$Rf = (-\infty, 1]$$

$$25 \quad \text{الف)} \quad \begin{cases} 2y^3 = -x^2 - 1 \\ 2y^3 = -x^2 - 1 \end{cases} \rightarrow 2y_1^3 = 2y_2^3 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2 \rightarrow \text{تابع است}$$

$$\text{ب)} \quad (4y^2 - 12y + 9) = \frac{x^2 - 2x + 1}{(x-1)^2} \Rightarrow -(2y-3)^2 = (x-1)^2 \Rightarrow (x-1)^2 + (2y-3)^2 = 0 \Rightarrow$$

$$x=1, y = \frac{3}{2} \Rightarrow \text{نقطه } (1, \frac{3}{2}) \text{ تابع است}$$

الف) $x \sin y = y \sin x \rightarrow \text{if } x = \pi \Rightarrow y = 2K\pi \Rightarrow$ 1, 50 ← ⑤

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \Rightarrow \frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{x}{y} \cdot \frac{y}{x}} = 2 \Rightarrow \frac{x^2 + y^2}{xy} = 2 \Rightarrow (x-y)^2 = 0 \Rightarrow x=y \Rightarrow$
x, y ≠ 0 ← ⑥

الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{3-x}{x}} \Rightarrow$ 1 3
+ | - | + $\Rightarrow (-\infty, 1] \cup (3, +\infty) = \emptyset$ ← ⑦
✓ 0 2
- | + | - $\Rightarrow (0, 2] = \mathbb{R} \Rightarrow \emptyset \cap \emptyset = \emptyset$
 $\Rightarrow Df = (0, 1]$

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3} \Rightarrow \sqrt{y-1} = \sqrt{3} - \sqrt{x} \Rightarrow \sqrt{3} - \sqrt{x} \geq 0 \Rightarrow \sqrt{x} \leq \sqrt{3} = \sqrt{3} \Rightarrow$
 $\Rightarrow Df = [0, 3]$ x ≤ 3, x ≥ 0

الف) $y = \sqrt{x^2 - 7x + 4} \rightarrow a+b+c=0 \Rightarrow x=4, x=1 \rightarrow$ 1 4
+ | - | + $\Rightarrow (-\infty, 1] \cup [4, +\infty)$ ⑧
 $\sqrt{x^2 - 10x + 14} \rightarrow \sqrt{-9x + 14} \Rightarrow -9x + 14 \geq 0 \Rightarrow x \leq \frac{14}{9} \Rightarrow$ 15
 $\emptyset \cap \emptyset \rightarrow Df = (-\infty, 1]$ ✓

ب) $y = \sqrt{\frac{x^2 - 7x + 4}{x^2 - 10x + 14}} \rightarrow x=4, x=1$ 1 4 4 1
+ | - | + | - | + $\Rightarrow Df = (-\infty, 1] \cup (2, 4] \cup (14, +\infty)$

الف) $y = \sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}} \rightarrow a+b+c=0 \Rightarrow x \leq \frac{3}{2}, x \leq 1$ 1 3/2
+ | - | + $\Rightarrow \emptyset \cap \emptyset$ ⑨
 $\sqrt{3x^2 - 7x + 4} \rightarrow a+b+c=0 \Rightarrow x \leq \frac{4}{3}, x \leq 1$ 1 4/3
+ | - | + $\Rightarrow \emptyset \cap \emptyset$
 $\Rightarrow Df = (-\infty, 1) \cup [\frac{3}{2}, +\infty)$

ب) $y = \sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}} \rightarrow x \leq \frac{3}{2}, x \leq 1$ 1 3/2 4/3
+ | - | + | - | + $\Rightarrow$ ✓ 25
 $Df = (-\infty, \frac{4}{3}) \cup [\frac{3}{2}, +\infty) - \{1\}$

در سوال ۱۰ قسمت ب به نظر من که راسته نیست و خود طرز اگر اینگونه باشد ←

$y = \sqrt{\frac{x^2 - 7x + 4}{x^2 - 10x + 14}} \rightarrow$ 1 4
+ | - | + $\Rightarrow \emptyset$ ⑩
 $\Rightarrow Df = (-\infty, 1] \cup (14, +\infty)$
 $x \leq 2, x \leq 14 \Rightarrow$ 1 14
+ | - | + $\Rightarrow \emptyset$