

19, 18

عسل کا مری یا زدم روضہ بنفشہ (C)

$$A = \{1, 2, 3\} \quad B = \{2, 3\}$$

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

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

$$\text{سوال 5} \rightarrow \{(3, m^2), (1, -2, m), (-2, m), (3, m+2), (m, 1)\}$$

$$\rightarrow m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m=2 \text{ or } m=-1$$

$$m=2 \rightarrow (3, 1), (1, 1), (1, 1), (3, 1) \rightarrow m=-1 \rightarrow (3, 1), (1, 1), (1, 1), (3, 1)$$

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

$$m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m=2 \text{ or } m=-1$$

$$m=2 \rightarrow (3, 1), (1, 1), (1, 1), (-1, 3), (-1, 3), (-1, 3)$$

بہ ازای ہر مقدار از m تابع منی باشد

$$f(x) = \begin{cases} x^2 - 1 & : x \leq 1 \\ ax + b & : 1 \leq x \leq 2 \\ x^2 & : x \geq 2 \end{cases} \quad \text{سوال 5}$$

$$\rightarrow a = -b \text{ و } 1(a) + b = 1^2 \rightarrow a + b = 1 \quad \frac{a = -b}{a - a} \rightarrow a = 1, b = -1$$

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

$$f(x) = \begin{cases} 2x - 3 & : x \geq k \\ 2 - 3x & : k \geq x \end{cases} \quad \text{سوال 5}$$

$$\Rightarrow 2k - 3 = 2 - 3k \rightarrow 5k = 5 \rightarrow k = 1$$

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

سوال 5 ←

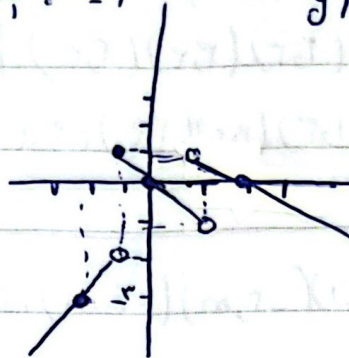
$$(1) \rightarrow \begin{array}{c|c} x/2 & 1 \\ \hline y & 1 \end{array}$$

$$(2) \rightarrow \begin{array}{c|c} x/2 & 1 \\ \hline y & 1 \end{array}$$

$$(3) \rightarrow \begin{array}{c|c} x/-1 & -2 \\ \hline y & -3 \end{array}$$

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

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



سوال 6 ← $2y^3 + x^2 + 1 = 0$ تا به این باشد ضمیمه

به اندازه هر که میسر دارد

$$\rightarrow \left[-\frac{1}{2}\right] \text{ و } \left[-1, 1\right] \text{ و } \dots$$

ب) $x^2 + 6y^2 - 4x - 12y + 1 = x^2 - 4x + 1 + 6y^2 - 12y + 9$

$$\rightarrow (x-1)^2 + (2y-3)^2 = 0$$

مشتق هر دو
مشتق هر دو

در دو ضلع
نقطه

$$\rightarrow (x-1)^2 = 0 \rightarrow x-1 = 0 \rightarrow x=1$$

$$6y^2 - 12y + 9 = 0 \rightarrow 2y^2 - 4y + 3 = 0$$

$$\rightarrow y = \frac{3}{2}$$

نقطه در نقطه $(1, \frac{3}{2})$ می باشد و در این تابع است

سوال 7 ← $x \sin y = y \sin x$ $\rightarrow x \sin 0 = y \sin 0 \rightarrow 0 = 0$ $\rightarrow$ هر دو می توانند باشند

به سه تابع می باشد

1, 2, 3

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \rightarrow \frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{xy}{yx}} = 4$

$$\rightarrow \frac{x^2+y^2}{xy} + 2\sqrt{\frac{xy}{xy}} = 4 \rightarrow \frac{x^2+y^2}{xy} + 2 = 4 \rightarrow \frac{x^2+y^2}{xy} = 2$$

$$\rightarrow 2xy = x^2+y^2 \rightarrow x^2+y^2-2xy = 0 \rightarrow (x-y)^2 = 0$$

$x=y$ $\rightarrow$ هر دو می توانند باشند و عبارت تابع می شود

$$x=y \neq 0$$

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الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{2-x}{x}} \rightarrow \frac{x-1}{x-3} \geq 0 \text{ و } \frac{2-x}{x} \geq 0 \leftarrow \text{سراش}$

① $\frac{x-1}{x-3} \rightarrow \frac{1}{+} \frac{3}{-} \rightarrow (-\infty, 1] \cup (3, +\infty)$

② $\frac{2-x}{x} \rightarrow \frac{0}{-} \frac{2}{+} \rightarrow (0, 2] \xrightarrow{\cap} (0, 1]$

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3} \rightarrow \sqrt{y-1} = \sqrt{3} - \sqrt{x}$

① $x \geq 0$ ② $\sqrt{3} - \sqrt{x} \geq 0 \rightarrow \sqrt{3} \geq \sqrt{x} \rightarrow 3 \geq x$
 $\cap \rightarrow [0, 3] \rightarrow 0 \leq x \leq 3$

الف) $y = \frac{\sqrt{x^2 - \sqrt{x+4}}}{\sqrt{x-1 \cdot x+4}}$ $\leftarrow \text{سراش}$

① $\rightarrow \sqrt{x^2 - \sqrt{x+4}} = \sqrt{(x-1)(x-4)} \rightarrow (x-1)(x-4) \geq 0$

$\frac{1}{+} \frac{4}{-} \rightarrow (-\infty, 1] \cup (4, +\infty)$

② $-9x+14 \geq 0 \rightarrow 14 \geq 9x \rightarrow \frac{14}{9} \geq x \rightarrow (-\infty, \frac{14}{9}]$

ب) $y = \frac{\sqrt{x^2 - \sqrt{x+4}}}{x^2 - 1 \cdot x + 4} = \frac{\sqrt{(x-1)(x-4)}}{(x-1)(x-4)} \rightarrow \frac{(x-1)(x-4)}{(x-1)(x-4)} \geq 0$

تقسیم عددها $\rightarrow \frac{1}{+} \frac{2}{-} \frac{4}{+} \frac{1}{-} \rightarrow (-\infty, 1] \cup (2, 4] \cup (1, +\infty)$

الف) $y = \frac{\sqrt{2x^2 - 5x + 3}}{\sqrt{3x^2 - 7x + 5}}$ $\leftarrow \text{سراش}$

① $2x^2 - 5x + 3 \geq 0 \rightarrow x^2 - 5x + 6 \rightarrow (x-2)(x-3) \rightarrow (2x-2)(x-\frac{3}{2})$

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

$$\begin{aligned}
 \textcircled{2} \quad & 4x^2 - \sqrt{x+1} > 0 \xrightarrow{\text{دوسرا}} x^2 - \sqrt{x+1} \rightarrow (x-1)(x-\frac{1}{4}) \xrightarrow{\text{مربع کرنا}} \\
 & (x-1)(x-\frac{1}{4}) \xrightarrow{\text{مربع کرنا}} \begin{array}{c} 1 \quad \frac{1}{4} \\ + \quad - \quad + \end{array} \rightarrow (-\infty, 1) \cup (\frac{1}{4}, +\infty) \\
 & \text{I.N.V.} \rightarrow (-\infty, 1) \cup [\frac{1}{4}, +\infty)
 \end{aligned}$$

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$$\begin{aligned}
 \textcircled{3} \quad & \sqrt{\frac{4x^2 - 0x + 3}{4x^2 - \sqrt{x+1}}} \rightarrow \frac{4x^2 - 0x + 3}{4x^2 - \sqrt{x+1}} \geq 0 \rightarrow \frac{(x-1)(x-\frac{1}{4})}{(x-1)(x-\frac{1}{4})} \\
 & \begin{array}{c} * \quad \frac{1}{4} \quad \frac{1}{4} \\ + \quad - \quad + \end{array} \rightarrow P.f = (-\infty, 1) \cup (1, \frac{1}{4}) \cup [\frac{1}{4}, +\infty)
 \end{aligned}$$