نام و نام خانوادگی ......هستی رحمانی...... پاسخنامه تشریحی تکلیف شماره ..۱.. کلاس ..یازدهم ت..

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$AB - B^2 \rightarrow B(A-B)$

$A-B = \{1,2,3\} - \{2,3\} \rightarrow \{1\}$

$\{1\} \times \{2,3\} \rightarrow \{(1,2),(1,3)\}$

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

$m^2 = m+2 \rightarrow m^2 - m - 2 = 0$ → $m=2$ غیرقابل قبول ، $m=-1$ ✓ $\Rightarrow m=-1$

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

$m^2 = m+2 \rightarrow m^2 - m - 2 = 0$ → $m=2$ غیرقابل قبول ، $m=-1$ → غیرقابل قبول

$\Rightarrow m =$ به ازای هیچ مقدار m ، $g(x)$ یک تابع نمی باشد

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$$f(x) = \begin{cases} x^2-1 & x \le 1 \\ ax+b & 1 \le x \le 2 \\ x^3 & x \ge 2 \end{cases}$$

$x=1 \rightarrow x^2 - 1 = ax+b \rightarrow a+b=0 \rightarrow a=-b$

$x=2 \rightarrow x^3 = ax+b \rightarrow 8 = 2a+b \rightarrow a=8,\ b=-8$

$a \times b = 8 \times (-8) = -64$

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$$f(x) = \begin{cases} 2x-3 & x \ge k \\ 4-3x & x \le k \end{cases}$$

$x=k \rightarrow 2k-3 = 4-3k \rightarrow 5k=7 \Rightarrow k = \frac{7}{5} = 1.4$

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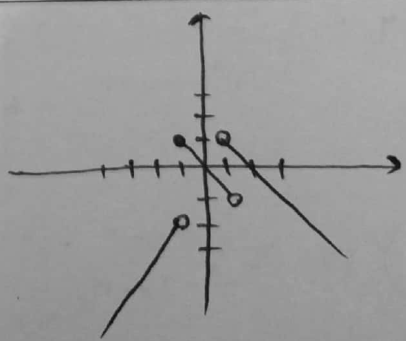
$$f(x) = \begin{cases} -x+2 & x > 1 \\ -x & -1 \le x < 1 \\ x-1 & x < -1 \end{cases}$$



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

$R_f = (-\infty,-2) \cup (-1,1]$

الف) $2y^3 + x^2 + 1 = 0 \longrightarrow \begin{cases} x_1 = x \to 2y_1^3 = -x_1^2 + 1 \\ x_2 = x \to 2y_2^3 = -x_2^2 + 1 \end{cases} \longrightarrow 2y_1^3 = 2y_2^3 \Rightarrow y_1^3 = y_2^3$

$\longrightarrow y_1 = y_2$

$\Rightarrow$ تابع هست ✓

ب) $x^2 + 4y^2 - 2x - 12y + 10 = 0 \longrightarrow (x-1)^2 + (2y-3)^2 = 0$

یک نقطه در آن صدق می کند $\begin{matrix} 1 \\ \frac{3}{2} \end{matrix}$

$\Rightarrow$ تابع هست ✓

الف) $x \sin y = y \sin x$ $\quad x=0 \to y=?$ به ازای $x=0$ ، y می تواند هر عددی باشد.

$0 \cdot \sin y = y \sin 0$

$0 = 0$

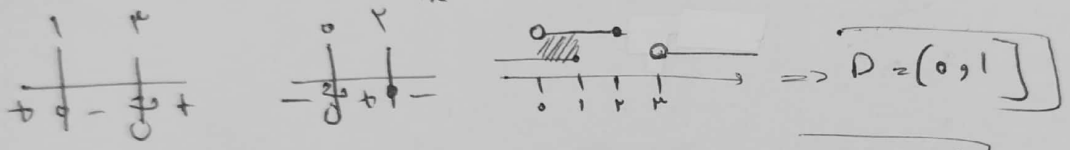
تابع نیست ✗

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$

$a + \frac{1}{a} \geq 2$ $\quad \frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{x}{y}\cdot\frac{y}{x}} = 4 \to \frac{x}{y} + \frac{y}{x} = 2 \to x^2 + y^2 = 2xy$

$\Leftarrow (x-y)^2 = 0 \leftarrow x = y \leftarrow$ تابع هست ✓

الف) $y = \sqrt{\frac{x-1}{x-4}} + \sqrt{\frac{2-x}{x}}$



$\Rightarrow D = (0, 1]$

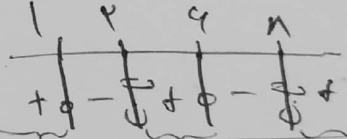
ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3}$

$\sqrt{x} \to x \geq 0 \to D = [0, 3]$ $\quad x \leq 3$

$\sqrt{y-1} = \sqrt{3} - \sqrt{x} \to \sqrt{3} - \sqrt{x} \geq 0$ $\quad \sqrt{3} \geq \sqrt{x}$

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

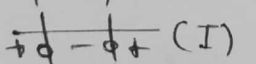
$(x-2)(x-8) \to x = 8, x = 2$



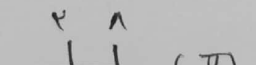
$D = (-\infty, 1] \cup (2, 6] \cup (8, +\infty)$

الف) $\sqrt{\frac{x^2 - 7x + 6}{x^2 - 10x + 16}}$

$\to x = 6, x = 1$ (I)



$\to x = 8, x = 2$ (II)

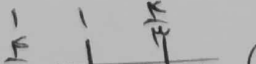


$I \cap II = (-\infty, 1] \cup (8, +\infty)$

الف) $y = \sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}}$

$\to x = 1, x = \frac{3}{2}$ (I)

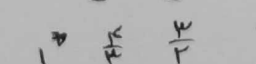
$\to x = 1, x = \frac{4}{3}$ (II)



$(I) \cap (II) \Rightarrow (-\infty, 1) \cup \left[\frac{3}{2}, +\infty\right)$

ب) $\sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}}$

$\to x = 1, x = \frac{3}{2}, x = \frac{4}{3}$



$(-\infty, \frac{4}{3}) \cup \left[\frac{3}{2}, +\infty\right) - \{1\}$