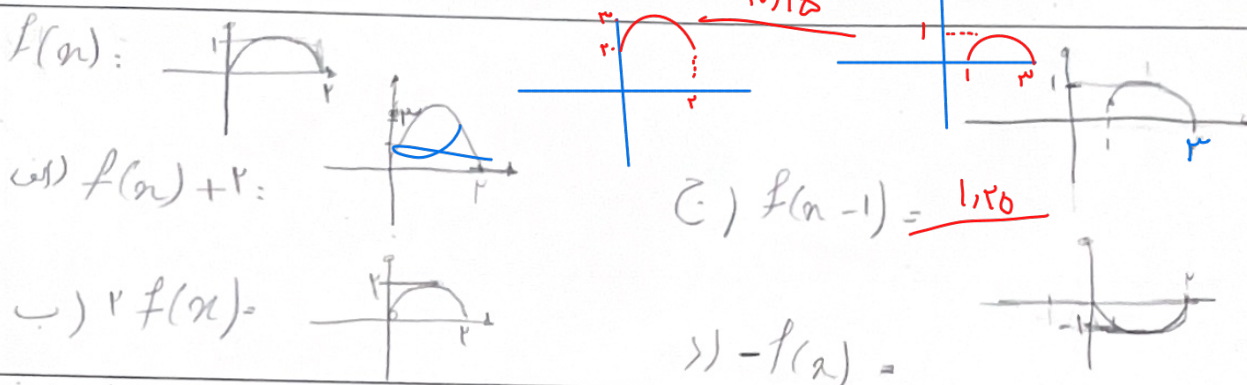


نام و نام خانوادگی: کلاس: پاسخنامه تشریحی تکلیف شماره ۵



الف) $x^2 - 5x + 4 > 0$
 $(x-2)(x-4) > 0$
 $x < 2$ or $x > 4$
 $D = (-\infty, 2) \cup (4, +\infty)$

ب) $x^2 - 4x + 5 > 0$
 $(x+1)(x+5) > 0$
 $x < -1$ or $x > -5$
 $D = (-\infty, -5] \cup [-1, +\infty)$

الف) $x^2 - 4x + 5 < 0$
 $(x-1)(x-5) < 0$
 $1 < x < 5$
 $D = (1, 5)$

ب) $x^2 - 4x + 5 < 0$
 $(x-1)(x-4) < 0$
 $1 < x < 4$
 $D = [1, 4]$

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$
 $x - 5 \neq 0 \rightarrow x \neq 5$
 $x^2 - 3x + 2 \neq 0 \rightarrow (x-1)(x-2) \neq 0 \rightarrow x \neq 1, 2$
 $D = (-\infty, 1) \cup (1, 2) \cup (2, 5) \cup (5, +\infty)$

ب) $\frac{x^2 - 1}{x^2 - 4x + 5} > 0$
 $(x+1)(x-1) \rightarrow x = \pm 1$
 $x^2 - 4x + 5 \neq 0 \rightarrow (x-1)(x-5) \neq 0 \rightarrow x \neq 1, 5$
 $D = (-\infty, -1] \cup (1, 5) \cup (5, +\infty)$

الف) $\sqrt{\frac{x^3 - 1}{x^3 - x}} = \frac{x^3 - 1}{x^3 - x} > 0$
 $x^3 - 1 = 0 \rightarrow x^3 = 1 \rightarrow x = 1$
 $x^3 - x \neq 0 \rightarrow x^3 = x \rightarrow x \neq 0, \pm 1$
 $D = (-\infty, -1) \cup (-1, 1) \cup (1, +\infty)$

ب) $\sqrt{\frac{x^2 - 14}{x^2 - 5x + 6}} = \frac{x^2 - 14}{x^2 - 5x + 6} > 0$
 $x^2 - 14 = 0 \rightarrow x = \pm \sqrt{14}$
 $(x-1)(x-6) \neq 0 \rightarrow x \neq 1, 6$
 $D = (-\infty, -\sqrt{14}] \cup (1, 6) \cup (6, +\infty)$

الف) $1 - x > 0 \rightarrow x < 1$
 $1 - \sqrt{1-x} > 0 \rightarrow \sqrt{1-x} < 1$
 $1 - \sqrt{1-x} > -1 \rightarrow \sqrt{1-x} < 2$
 $\sqrt{1-x} < 1$
 $1 - x < 14 \rightarrow -14 < -x \rightarrow x < 14$
 $D = [14, 15]$

ب) $x - 2 > 0 \rightarrow x > 2$
 $3 - \sqrt{x-2} > 0 \rightarrow \sqrt{x-2} < 3$
 $-\sqrt{x-2} > -3 \rightarrow \sqrt{x-2} < 3$
 $\sqrt{x-2} < 3$
 $x - 2 < 9 \rightarrow x < 11$
 $D = [2, 11]$

الف) $y = \sqrt{4-2x^2}$ $4-2x^2 \geq 0 \rightarrow 4 \geq 2x^2 \Rightarrow 2 \geq x^2$ الف)	ب) $3 x-9 \geq 0$ $3 x \geq 9 \quad x \geq 3 \quad x \geq 3$ $x \leq -3$ $D = [3, +\infty) \cup (-\infty, -3]$ 1, 7, 8	6
$\frac{ x +1}{ x -3} > 0$ $x \neq 3 \Rightarrow x = \pm 3$ $x +1 \neq 0 \quad x \neq -1$ غیر ممکن ب) $\frac{\sqrt{x+1}}{\sqrt{x-3}} > 0$ $x \geq 0$ $\sqrt{x-3} \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9$ $\sqrt{x+1} \neq 0 \Rightarrow \sqrt{x} \neq -1 \Rightarrow x \neq 1$ غیر ممکن فردی و زوجی بودن بررسی را یکبار نمی‌توانیم بکنیم 1, 2, 8 $D = \mathbb{R} - \{3, -3\}$	$D = \mathbb{R} - \{3, -3\}$ $[0, +\infty) - \{9\}$ $D = \mathbb{R} - \{3, -3\}$ 7	7
الف) $2\cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \rightarrow D = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ ب) $2\sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{2} \rightarrow D = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$ ج) $\frac{\cos x}{\sin x} - 1 \neq 0 \rightarrow \frac{\cos x}{\sin x} \neq 1 \rightarrow D = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$ د) $2\sin^2 x - 3 \neq 0 \Rightarrow \sin^2 x \neq \frac{3}{2} \xrightarrow{\text{غیر ممکن}} \sin x = \frac{\sqrt{3}}{2} \rightarrow D = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$	$D = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ $D = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$ $D = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$ $D = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ 8	8
$y = \frac{1}{\sqrt{ x-2 - \frac{1}{x}}} =$ $2 x-2 - \frac{1}{x} > 0$ $2 x-2 > \frac{1}{x} \rightarrow x-2 > \frac{1}{x} \Rightarrow x-2 > \frac{1}{x} \rightarrow x > \frac{9}{x}$ $2 x-2 > \frac{1}{x} \rightarrow x-2 > \frac{1}{x} \Rightarrow x-2 < \frac{1}{x} \rightarrow x < \frac{9}{x}$	$D = (-\infty, \frac{9}{x}) \cup (\frac{9}{x}, +\infty)$ 9	9
الف) $4-2 x \geq 0 \rightarrow -2 x \geq -4 \quad x \geq 2$ ب) $\frac{ x }{ x } > 0 \rightarrow$ همیشه درست $x \geq 2$ $x \leq -2$ $D = (-\infty, -2] \cup [2, +\infty)$ 1, 6	$D = \mathbb{R} - \{0\}$ 10	10