

الف) $\frac{x+2}{x^3-10x^2+11x-10} = \frac{x^3-10x^2+11x-10}{x^3-10x^2+11x-10} \cdot \frac{x-1}{x-1} = \frac{x^3-10x^2+11x-10}{(x-1)(x^2-9x+10)}$

$\Rightarrow \frac{x+2}{(x-1)(x^2-9x+10)}$

$D_f = \mathbb{R} - \left\{ \frac{10}{9}, 1 \right\}$ ✓

ب) $\frac{x+2}{x^3-x^2-11x-6} = \frac{x^3-x^2-11x-6}{x^3-x^2-11x-6} \cdot \frac{x+1}{x+1} = \frac{x^3-x^2-11x-6}{(x+1)(x^2-2x-6)}$

$D_f = \mathbb{R} - \left\{ 1, -1, -\frac{2}{3} \right\}$ ✓ $y = \frac{y}{x} \leftarrow (x-1)(x+1) \rightarrow -\frac{2}{x}$

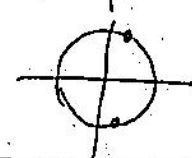
الف) $\frac{x+1}{x-\sqrt{3-2x}} = \frac{x+1}{x-\sqrt{3-2x}} \cdot \frac{x+\sqrt{3-2x}}{x+\sqrt{3-2x}} = \frac{x^2-3+2x}{x^2-3+2x} \cdot \frac{x+\sqrt{3-2x}}{x+\sqrt{3-2x}} = \frac{x+\sqrt{3-2x}}{x+\sqrt{3-2x}}$

$D_f = (-\infty, \frac{3}{2}] - \left\{ \frac{3}{2} \right\}$ ✓ جواب ها را حذف کن

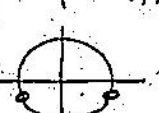
ب) $\frac{x+2}{x-\sqrt{3x-2}} = \frac{x+2}{x-\sqrt{3x-2}} \cdot \frac{x+\sqrt{3x-2}}{x+\sqrt{3x-2}} = \frac{x^2-3x+2}{x^2-3x+2} \cdot \frac{x+\sqrt{3x-2}}{x+\sqrt{3x-2}} = \frac{x+\sqrt{3x-2}}{x+\sqrt{3x-2}}$

$D_f = [\frac{2}{3}, +\infty) - \left\{ \frac{2}{3} \right\}$ ✓ $(x-\sqrt{3x-2})(x+\sqrt{3x-2}) \neq 0$

الف) $y = \frac{\sin x}{\cos x - 1} \quad \cos x - 1 \neq 0 \quad \cos x \neq 1$

$D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{2} \right\}$ ✓ 

ب) $y = \frac{\cos x + 1}{\sin x + 1} \quad \sin x + 1 \neq 0 \quad \sin x \neq -1$

$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{5\pi}{2} \right\}$ ✓ 

ج) $y = \frac{\tan x + 2}{\cot x + 1} = \frac{\sin x + 2 \cos x}{\cos x + \sin x} \quad \sin x + 2 \cos x \neq 0$

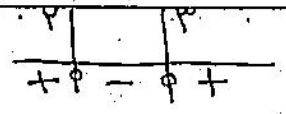
$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi \right\}$ ✓ 

د) $y = \frac{\sin x + 1}{\sin^2 x - 3} \quad \sin^2 x - 3 \neq 0 \quad \sin x \neq \pm \sqrt{3}$

$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right\}$ ✓ 

الف) $x^2-5x+6 > 0$

$(x-2)(x-3) > 0$

$(-\infty, 2) \cup (3, +\infty)$ ✓ 

ب) $x^2+4x+5 < 0$

$(x+1)(x+5) < 0$

$(-1, -5)$ ✓ 

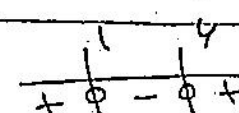
ج) $x^2+4x+5 \geq 0$

$(x+1)(x+5) \geq 0$

$(-\infty, -1] \cup [-5, +\infty)$ ✓ 

د) $x^2-7x+6 \leq 0$

$(x-1)(x-6) \leq 0$

$[1, 6]$ ✓ 

ا) $\frac{x^2 - 2x + 1}{x - 1} \geq 0$ $\frac{(x-1)^2}{x-1} \geq 0$

$x > 1$

$- \quad + \quad - \quad +$

$(-\infty, 1) \cup (1, \infty)$

ب) $\frac{x^2 - 1}{x^2 - 1} \geq 0$ $\frac{(x-1)(x+1)}{(x-1)(x+1)} \geq 0$

$x^2 - 1 > 0$

$x^2 = 1$

$x \neq \pm 1$

$-\infty < x < -1$ $1 < x < \infty$

$(-\infty, -1) \cup (1, \infty)$

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

$x > 1$

$- \quad + \quad - \quad +$

$D_f = [1, \infty)$

ب) $\sqrt{\frac{x^2 - 2x + 1}{x^2 - 1}}$

$x^2 - 1 > 0$

$x^2 = 1$

$x \neq \pm 1$

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

ا) $\log(x^2 - 2x)$ $x^2 - 2x > 0$

$x(x-2) > 0$

$0 < x < 2$

$D_f = (-\infty, 0) \cup (2, \infty)$

ب) $\log \frac{1-x^2}{|x|-2}$ $1-x^2 > 0$

$-1 < x < 1$

$|x|-2 > 0$ $|x| > 2$

$x < -2$ $x > 2$

$D_f = (-2, -1) \cup (1, 2)$

ج) $\log \frac{x^2 - 2x + 1}{x - 1}$ $\frac{(x-1)^2}{(x-1)^2} > 0$

$1-x > 0$

$x < 1$

$1-x > 0$ $x \neq 1$ $D_f = (1, \infty) - \{1\}$

د) $\sqrt{x^2 - 12x + 21} + \log \frac{\sqrt{x^2 - 12x + 21}}{x} \geq 0$

$(x-6)(x-3.5) > 0$

$x < 3.5$ $x > 6$

$x > 0$ $x \neq 1$

$D_f = (-4, 4) \cup [6, \infty) - \{1\}$

$y = \frac{x^2 - x}{x^2 + x} = \frac{x(x-1)}{x(x+1)}$

$x > 1$

$(-\infty, -1) \cup [1, \infty)$

$-1 < x < 1$

$(-\infty, -1) \cup [1, \infty)$

	-1	0	
$x(x-1)$	-	-	+
$x(x+1)$	-	+	+
$D_f(x)$	+	-	+

$\Rightarrow D_f = (-\infty, -1) \cup [1, \infty)$

$y = \sqrt{\frac{x-f(x)}{f(x)}}$ $\frac{x-f(x)}{f(x)} \geq 0$

$x > 1$

$D_f = [-2, -1] \cup (1, 4]$

$-2 < x < -1$ $1 < x < 4$

$D_f = [-2, -1] \cup (1, 4]$

