

الف) $\frac{x+2}{2x^3-2x^2+3x-15}$

$2x^3-2x^2+3x-15 \neq 0$ $D_f = R - \left\{1, \frac{3}{2}, \frac{5}{2}\right\}$
 $(x-1)(2x^2-19x+15) \neq 0$
 $(x-1)(2x-3)(x-5) \neq 0$

(5)

$x \neq 1$ $x \neq \frac{3}{2}$ $x \neq \frac{5}{2}$

ب) $\frac{x+3}{3x^3-x^2-11x-4}$

$3x^3-x^2-11x-4 \neq 0$
 $(x+1)(3x^2-4x-4) \neq 0$
 $(x+1)(x-2)(x+\frac{2}{3}) \neq 0$

$D_f = R - \left\{-1, 2, -\frac{2}{3}\right\}$

الف) $\frac{x+1}{x-\sqrt{3-2x}}$

$3-2x \geq 0$ $3 \geq 2x$ $\frac{3}{2} \geq x$ $x = -\frac{3}{2}$
 $y = -\frac{2}{-4} = \frac{1}{2}$ $(1, \frac{1}{2})$
 $x-\sqrt{3-2x} \neq 0$ $D_f = (-\infty, \frac{3}{2}] - \{1, x\}$

$x \neq \sqrt{3-2x}$

$x^2 \neq 3-2x$

$x^2+2x-3 \neq 0$ $(x-1)(x+3) \neq 0$

$x \neq 1$ $x \neq -3$

ب) $\frac{x+2}{x-\sqrt{3x-2}}$

$3x-2 \geq 0$ $3x \geq 2$ $x \geq \frac{2}{3}$

$x-\sqrt{3x-2} \neq 0$ $x \neq \sqrt{3x-2}$

$x^2 \neq 3x-2$

$x^2-3x+2 \neq 0$ $(x-1)(x-2) \neq 0$

$x \neq 1$ $x \neq 2$

$D_f = \left[\frac{2}{3}, +\infty\right) - \{1, 2\}$

الف) $y = \frac{\sin x}{2\cos x - 1}$

$2\cos x - 1 \neq 0$ $D_f = R - \left\{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\right\}$ ✓

$\cos x \neq \frac{1}{2}$

ب) $y = \frac{\cos x + 1}{2\sin x + 1}$

$2\sin x + 1 \neq 0$ $\sin x \neq -\frac{1}{2}$ $D_f = R - \left\{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\right\}$ ✓

$2\sin x \neq -1$

ج) $y = \frac{\tan x + 1}{\cot x - 1}$

$\cot x - 1 \neq 0$ $D_f = R - \left\{2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}, \frac{k\pi}{2}\right\}$ ✓

$\cot x \neq 1$

$\sin \neq 0$ $\cos \neq 0$

د) $y = \frac{\sin x + 1}{2\sin^2 x - 3}$

$2\sin^2 x - 3 \neq 0$ $\sin^2 x \neq \frac{3}{2}$
 $2\sin^2 x \neq 3$ $\sin x \neq \sqrt{\frac{3}{2}}$

$D_f = R - \left\{2k\pi + \frac{\sqrt{6}}{2}, 2k\pi + \frac{5\sqrt{6}}{2}\right\}$ ✓

الف) $x^2 - 5x + 2 > 0$ $(x-3)(x-2) > 0$ $f(x) \begin{array}{c|ccc} & 2 & 3 & & \\ \hline & + & - & + & \end{array}$ $Df = (-\infty, 2) \cup (3, +\infty)$ -2

ب) $x^2 - 4x + 5 > 0$ $(x-1)(x-5) < 0$ $f(x) \begin{array}{c|ccc} & 1 & 5 & & \\ \hline & + & - & + & \end{array}$ $Df = (1, 5)$ ∞

ج) $x^2 + 2x + 5 > 0$ $(x+1)(x+5) \geq 0$ $f(x) \begin{array}{c|ccc} & -5 & -1 & & \\ \hline & + & - & + & \end{array}$ $Df = (-\infty, -5] \cup [-1, +\infty)$

د) $x^2 - 7x + 4 \leq 0$ $(x-1)(x-4) \leq 0$ $f(x) \begin{array}{c|ccc} & 1 & 4 & & \\ \hline & + & - & + & \end{array}$ $Df = [1, 4]$

الف) $\frac{x^2 - 3x + 2}{x-5} < 0$ $\frac{(x-1)(x-2)}{(x-5)} < 0$ $f(x) \begin{array}{c|ccc} & 1 & 2 & 5 & \\ \hline & - & + & - & \end{array}$ $Df = (-\infty, 1) \cup (2, 5)$ ∞

ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$ $\frac{(x+1)(x-1)}{(x-5)(x-1)} \geq 0$ $f(x) \begin{array}{c|ccc} & -1 & 1 & 5 & \\ \hline & + & - & - & \end{array}$ $Df = (-\infty, -1] \cup (5, +\infty)$

الف) $y = \sqrt{\frac{x^2 - 4x + 2}{x^2 - 1}}$ $\frac{(x-1)(x-2)}{x^2 - 1} \geq 0$ $f(x) \begin{array}{c|ccc} & 1 & 2 & & \\ \hline & - & - & + & \end{array}$ $Df = [2, +\infty)$ -2

ب) $y = \sqrt{\frac{x^2 - 4x + 2}{x^2 - 1}}$ $x^2 - 1 \neq 0$ $x \neq \pm 1$ $Df = \mathbb{R} - \{1, -1\}$

الف) $y = \log(x^2 - 2x)$ $x(x-2) > 0$ $f(x) \begin{array}{c|ccc} & 0 & 2 & & \\ \hline & + & - & + & \end{array}$ $Df = (-\infty, 0) \cup (2, +\infty)$ -2

ب) $y = \log \frac{17 - x^2}{|x| - 2}$ $|17 - x^2| > 0$ $|x| - 2 > 0$ $|x| - 2 \neq 1$ $Df = (-2, -2) \cup (2, 2) - \{\pm 2\}$

ج) $\log \frac{x^2 - 12x + 4}{1 - x}$ $\frac{(x-3)(x-4)}{(x-2)} > 0$ $f(x) \begin{array}{c|ccc} & 2 & 3 & 4 & \\ \hline & - & - & + & \end{array}$ $Df = (2, +\infty) - \{2\}$

د) $y = \sqrt{x^2 - 11x + 21} + \log \sqrt{74 - x^2}$ $(x-4)(x-7) \geq 0$ $f(x) \begin{array}{c|ccc} & 4 & 7 & & \\ \hline & + & - & + & \end{array}$ $Df = (-\infty, 4] \cup [7, +\infty)$

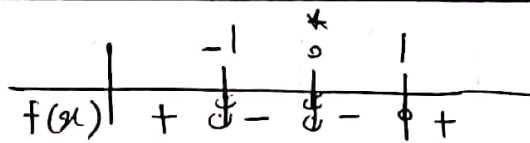
$x > 0$ $x \neq 1$ $Df = (0, 4] - \{1\}$

$74 - x^2 > 0$ $(7-x)(x+7) > 0$ $f(x) \begin{array}{c|ccc} & -7 & 7 & & \\ \hline & - & + & - & \end{array}$

همسر A

بارسار جالی

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



	-1	0	1	
$x^2 - x$	-	+	-	+
$x^2 + x$	-	-	+	+
$P(x)$	+	-	-	+

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

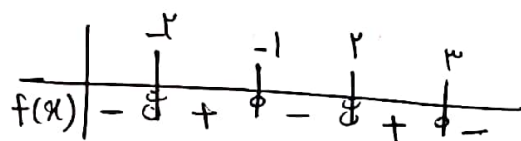
$$\frac{x - f(x)}{f(x)} \geq 0$$

بیشتر ۱، ۲ -
۲، ۲ -

$$f(x) \neq 0$$

$$x \neq 2, -2$$

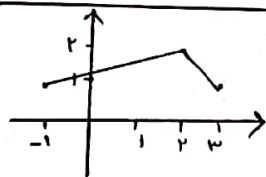
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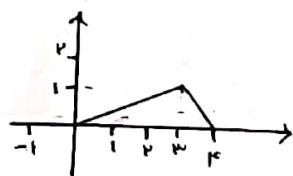
$$Df = [-2, -1] \cup [2, 3] - \{2, -2\}$$

نیاز نیست
چون از طرف ۲ و ۲
باز است

الف) $f(x) + 1$

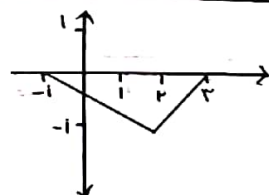


ب) $f(x_1)$



ج) $-f(x)$

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د) $f(x+1) + 2$

