

$$\begin{array}{r} \text{الف) } 4x^3 - 2x^2 + 3x + 5 \quad | \quad x-1 \\ \underline{-4x^3 + 4x^2} \\ -14x^2 + 31x + 5 \\ \underline{+14x^2 - 14x} \\ 15x + 5 \\ \underline{-15x + 15} \\ 0 \end{array}$$

$$(2x-3)(2x-5)(x-1) \neq 0$$

$$D_f = \mathbb{R} - \left\{ \frac{3}{2}, \frac{5}{2}, 1 \right\}$$

(1)

(2)

$$\begin{array}{r} \text{ب) } 3x^3 - x^2 - 8x - 4 \quad | \quad x+1 \\ \underline{-3x^3 + 3x^2} \\ -4x^2 - 8x - 4 \\ \underline{+4x^2 + 4x} \\ -4x - 4 \\ \underline{+4x + 4} \\ 0 \end{array}$$

$$x^2 - 4x + 4 = (x-2)^2$$

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

$$\text{الف) } 3 - 2x > 0 \rightarrow x < \frac{3}{2}$$

$$x \neq -\frac{2}{3} \text{ و } 1$$

(2)

$$x - \sqrt{3-2x} \neq 0 \rightarrow x \neq \sqrt{3-2x} \rightarrow x^2 \neq 3-2x \rightarrow (x+2)(x-1) \neq 0$$

$$D_f = (-\infty, \frac{3}{2}] - \left\{ \frac{1}{2} \right\} \quad \text{دست: } -\{1\} \quad \text{انبار: } (2)$$

$$\text{ب) } 3x - 2 > 0 \rightarrow x > \frac{2}{3}$$

$$x \neq \frac{1}{2} \text{ و } 2$$

$$x - \sqrt{3x-2} \neq 0 \rightarrow x \neq \sqrt{3x-2} \rightarrow x^2 \neq 3x-2 \rightarrow (x-1)(x-2) \neq 0$$

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

$$\text{الف) } 2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \quad D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \right\}$$

(2)

$$\text{ب) } 2\sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$$

$$\left. \begin{array}{l} \cos x \neq 0 \\ \sin x \neq 0 \\ \cot x \neq 0 \end{array} \right\} D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2} \right\}$$

(٢)

١) $\sqrt{\sin^2 x} \neq 3 \rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2}$ $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right\}$

ا) $x^2 - 8x + 9 > 0 \rightarrow (x-1)(x-9) > 0$ $D_f = (-\infty, 1) \cup (9, +\infty)$

ب) $x^2 - 9x + 0 < 0 \rightarrow (x-1)(x-0) < 0$ $D_f = (1, 0)$

ج) $x^2 + 9x + 0 > 0 \rightarrow (x+1)(x+0) > 0$ $D_f = (-\infty, -1] \cup [0, +\infty)$

د) $x^2 - 14x + 9 < 0 \rightarrow (x-1)(x-9) < 0$ $D_f = [6, 9]$

ا) $\frac{(x-1)(x-2)}{x-5} < 0$ $D_f = (-\infty, 1) \cup (2, 5)$

ب) $\frac{(x-1)(x+1)}{(x-1)(x-5)} > 0$ $D_f = (-\infty, -1] \cup (0, +\infty)$

ا) $\frac{x^2 - 14x + 3}{x^2 - 1} > 0 \rightarrow \frac{(x-1)(x-3)}{x^2 - 1} > 0$ $D_f = [3, +\infty)$

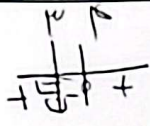
ب) $x^2 \neq 1 \rightarrow x \neq \pm 1$ $D_f = \mathbb{R} - \{\pm 1\}$

ا) $x^2 - 3x > 0 \rightarrow x(x-3) > 0$ $D_f = (-\infty, 0) \cup (3, +\infty)$

ب) $|4 - x^2| > 0 \rightarrow x^2 < 4 \rightarrow -2 < x < 2$
 $|x - 2| > 0 \rightarrow |x| > 2 \rightarrow x > 2$
 $|x| < -2$
 $|x| - 2 \neq 1 \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3$

$D_f = (-\infty, -2) \cup (2, 3) \cup (3, +\infty)$

ج) $\frac{(x-3)(x-5)}{x-9} > 0$



$10-x > 0 \rightarrow x < 10$

$10-x \neq 1 \rightarrow x \neq 9$

$D_f = (3, 5) \cup (5, 9)$

✓

د) $(x-7)(x-5) > 0$



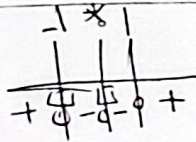
$36-x^2 > 0 \rightarrow 36 > x^2 \rightarrow -6 < x < 6$

$x > 0$

$x \neq 1$

$D_f = (0, 6] \cup (6, 9)$

روش سریع $y = \frac{x(x-1)}{x(x+1)}$



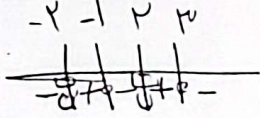
روش آرایه‌ای

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

⊙

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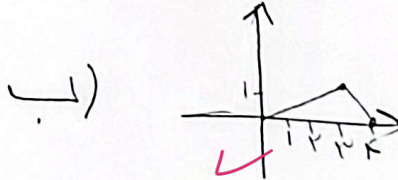
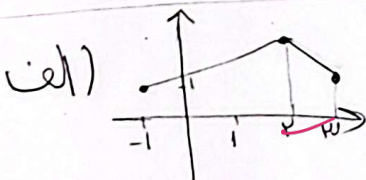
$\frac{x-f(x)}{f(x)} > 0$



$D_f = (-2, -1] \cup (2, 3]$

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