

$$\text{الف) } \frac{x+2}{x^3-x^2+x-10}$$

جميع المقامات = 0

=>

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

$$\Rightarrow D_f = \mathbb{R} - \{1, 0, 5, 2, 0\}$$

$$\text{ب) } \frac{x+3}{3x^3-x^2-11x-2}$$

جميع المقامات = 0

بافرض جازم است

$$\Rightarrow \frac{x+3}{(x+1)(3x^2-2x-2)}$$

$$\begin{aligned} x^2-2x-1 &= 0 & x &= 3 \\ (x-4)(x+2) &= 0 & x &= -\frac{2}{3} \end{aligned}$$

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

$$\text{الف) } \frac{x+1}{x-\sqrt{3-2x}}$$

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

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

$$x^2 \neq 3-2x$$

$$x^2+2x-3 \neq 0$$

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

$$\Rightarrow x \neq -3$$

$$x \neq 1$$

$$D_f = \mathbb{R} - \{-3, 1\}$$

$$\text{ب) } \frac{x+2}{x-\sqrt{3x-2}}$$

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

$$x^2 \neq 3x-2$$

$$x^2-3x+2 \neq 0$$

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

$$x \neq 2$$

$$x \neq 1$$

$$D_f = \mathbb{R} - \{1, 2\}$$

$$\text{الف) } y = \frac{\sin x}{\sqrt{\cos x - 1}}$$

$$\sqrt{\cos x} \neq 1$$

$$\cos x \neq 1$$

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

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

$$\sqrt{\sin x} \neq -1$$

$$\sin x \neq -\frac{1}{4}$$

$$D_f = \mathbb{R} - \{2k\pi + \frac{5\pi}{6}, 2k\pi + \frac{7\pi}{6}\}$$

$$\text{ج) } y = \frac{\tan x + 2}{\cot x - 1}$$

$$\cot x \neq 1$$

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

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

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

$$\sqrt{\sin^2 x} \neq 3$$

$$\sin^2 x \neq \frac{9}{4}$$

$$\sin x \neq \pm \frac{3}{2}$$

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

$$\text{الف) } x^2 - 6x + 4 > 0$$

$$(x-2)(x-4) > 0$$

$$\begin{array}{c} 2 \quad 4 \\ + \quad - \quad + \end{array}$$

$$(-\infty, 2) \cup (4, \infty)$$

$$\text{ب) } x^2 - 4x + 5 < 0$$

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

$$\begin{array}{c} 1 \quad 5 \\ + \quad - \quad + \end{array}$$

$$1 < x < 5$$

$$D_f = (1, 5)$$

$$\text{ج) } x^2 + 4x + 5 > 0$$

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

$$\begin{array}{c} -1 \quad -5 \\ + \quad - \quad + \end{array}$$

$$x > -1, x < -5$$

$$(-\infty, -5) \cup (-1, \infty)$$

$$\text{د) } x^2 - 4x + 4 \leq 0$$

$$(x-1)(x-4) \leq 0$$

$$\begin{array}{c} 1 \quad 4 \\ + \quad - \quad + \end{array}$$

$$1 \leq x \leq 4$$

$$D_f = [1, 4]$$

$$\text{الف) } \frac{x^2 - 3x + 2}{x - 5} < 0$$

$$\frac{(x-1)(x-2)}{x-5} < 0$$

$$\begin{array}{c} 1 \quad 2 \quad 5 \\ - \quad + \quad - \quad + \end{array}$$

$$x < 1, 2 < x < 5$$

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$$\text{ب) } \frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$$

$$\frac{(x+1)(x-1)}{(x-1)(x-5)} \geq 0$$

$$\begin{array}{c} -1 \quad 1 \quad 5 \\ + \quad - \quad - \quad + \end{array}$$

$$D_f = (-\infty, -1) \cup (5, \infty)$$

الف)

$$\frac{(x-1)(x-3)}{x^2(x-1)} > 0$$

$$D_f = (-\infty, 0) \cup (3, \infty)$$

$$-\sqrt{\frac{x^2 - \varepsilon x + 3}{(x+1)(x-1)}}$$

$$x \neq \pm 1$$

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

4

الف) $\log(x^2 - 3x)$

$$x^2 - 3x > 0$$

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

$$x > 3$$

$$x < 0$$

$$D_f = (-\infty, 0) \cup (3, \infty)$$

ب) $|4-x| > 0$
 $|x|-2 > 0$
 $|x|-2 \neq 1$
 $-\varepsilon < x < \varepsilon$
 $x > 2, x < -2$
 $x \neq \pm 2$
 $D_f = (-\varepsilon, -2) \cup (2, \varepsilon) - \{-2, 2\}$

ج) $\frac{x^2 - 6x + 9}{x-2} > 0$

$$\frac{(x-3)(x-3)}{x-2} > 0$$

$$1 - x > 0 \quad x < 1$$

$$x \neq 9 \quad D_f = (9, 1) - \{9\}$$

د) $\sqrt{x^2 - 11x + 28}$

$$x \in \mathbb{R} \quad x > 0$$

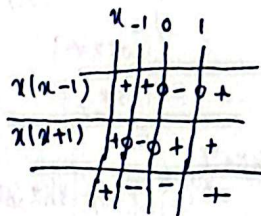
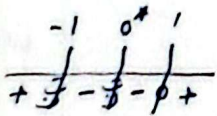
$$4-x > 0 \quad x < 4$$

$$x > 1 \quad x \neq 1$$

$$D_f = (1, 4] - \{1\}$$

5

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



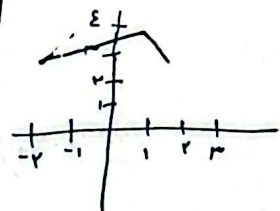
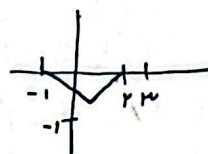
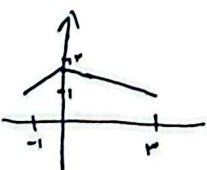
6

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

$$D_f = (-\infty, -2) \cup (2, \infty) \cup \{-1\}$$

9

الف) $f(x) + 1$



6