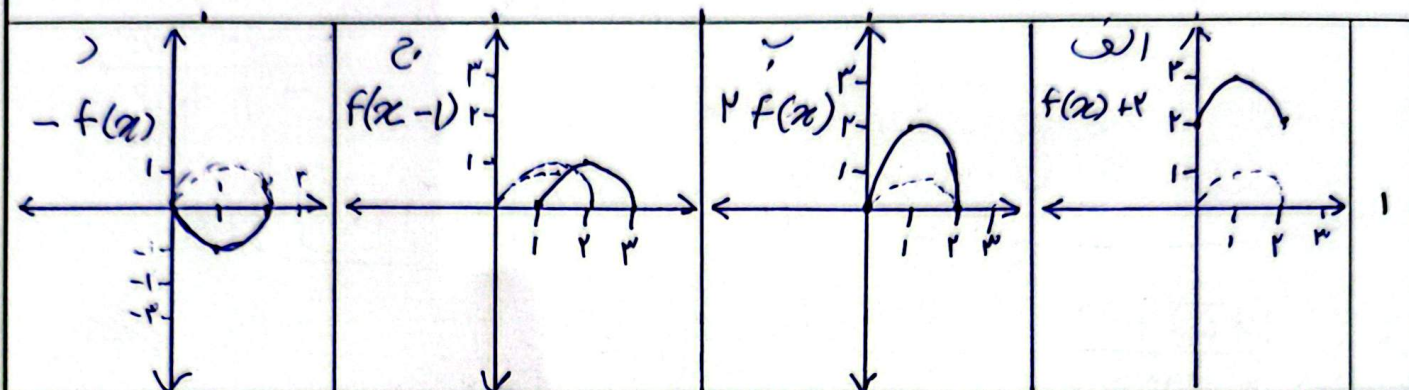




$x^2 - 7x + 9 \leq 0 \quad (>)$ $= (x-4)(x-1) \leq 0$ $\frac{1}{+} \quad \frac{4}{-} \quad \frac{1}{+}$ $[1, 4]$	$x^2 + 9x + 0 \geq 0 \quad (e)$ $= (x+0)(x+1) \geq 0$ $\frac{-0}{+} \quad \frac{-1}{-} \quad \frac{+}{+}$ $(-\infty, -0] \cup [-1, +\infty)$	$x^2 - 4x + 0 < 0 \quad (v)$ $= (x-0)(x-1) < 0$ $\frac{1}{+} \quad \frac{0}{-} \quad \frac{1}{+}$ $(1, 0)$	$x^2 - 5x + 6 > 0 \quad (الف)$ $= (x-3)(x-2) > 0$ $\frac{3}{+} \quad \frac{2}{-} \quad \frac{+}{+}$ $(-\infty, 2) \cup (3, +\infty)$
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$\frac{x^2 - 1}{x^2 - 9x + 0} \geq 0 \Rightarrow \frac{x^2 - 1}{(x-0)(x-1)} \geq 0$ $\frac{-1}{+} \quad \frac{1}{-} \quad \frac{0}{-} \quad \frac{+}{+}$ $(-\infty, -1] \cup (0, +\infty)$	$\frac{x^2 - 3x + 2}{x - 0} < 0 = \frac{(x-2)(x-1)}{x-0} < 0$ $\frac{1}{-} \quad \frac{2}{+} \quad \frac{0}{-} \quad \frac{+}{+}$ $(-\infty, 1) \cup (2, 0)$
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$y = \sqrt{\frac{x^2 - 19}{x^2 - 5x + 4}} \Rightarrow \frac{x^2 - 19}{x^2 - 5x + 4} \geq 0 \quad (v)$ $= \frac{(x-4)(x+4)}{(x-1)(x-4)} \geq 0$ $\frac{-4}{+} \quad \frac{1}{-} \quad \frac{4}{+} \quad \frac{1}{+}$ $(-\infty, -4] \cup (1, 4) \cup (4, +\infty)$	$y = \sqrt{\frac{x^3 - 1}{x^3 - x}} \Rightarrow \frac{x^3 - 1}{x^3 - x} \geq 0 \quad (الف)$ $= \frac{x^3 - 1}{x(x^2 - 1)} \geq 0$ $\frac{-1}{+} \quad \frac{0}{-} \quad \frac{1}{+} \quad \frac{1}{+}$ $(-\infty, -1) \cup (0, 1) \cup (1, +\infty)$
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$y = \sqrt{3 - \sqrt{2x+1}}$ $3 - \sqrt{2x+1} \geq 0 \Rightarrow 3 \geq \sqrt{2x+1} \Rightarrow 9 \geq 2x+1 \Rightarrow 8 \geq 2x \Rightarrow 4 \geq x$ $\sqrt{2x+1} \geq 0 \Rightarrow 2x+1 \geq 0 \Rightarrow 2x \geq -1 \Rightarrow x \geq -0.5$ $\Rightarrow -0.5 \leq x \leq 4 \rightarrow x = [-0.5, 4]$	$y = \sqrt{4 - \sqrt{2x-2}}$ $4 - \sqrt{2x-2} \geq 0 \Rightarrow 4 \geq \sqrt{2x-2} \Rightarrow 16 \geq 2x-2 \Rightarrow 18 \geq 2x \Rightarrow 9 \geq x$ $\sqrt{2x-2} \geq 0 \Rightarrow 2x-2 \geq 0 \Rightarrow 2x \geq 2 \Rightarrow x \geq 1$ $\Rightarrow 1 \leq x \leq 9 \rightarrow x = [1, 9]$
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$$y = \sqrt{3|x| - 9} \Rightarrow 3|x| - 9 \geq 0$$

$$\Rightarrow 3(|x| - 3) \geq 0$$

$$\begin{array}{c} -3 \quad 3 \\ + \quad | \quad - \quad | \quad + \end{array}$$

$$(-\infty, -3] \cup [3, +\infty)$$

$$y = \sqrt{4 - x^2} \Rightarrow 4 - x^2 \geq 0$$

$$\Rightarrow x(2 - x) \geq 0$$

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

$$[-2, 2]$$

$$y = \frac{\sqrt{|x| + 1}}{\sqrt{|x| - 3}} \quad (ف)$$

$$|x| - 3 \neq 0 \Rightarrow |x| \neq 3$$

$$\Rightarrow x \neq 3 \text{ و } -3$$

$$D_f = (\mathbb{R} - \{3, -3\})$$

$$y = \frac{\sqrt{x+1}}{\sqrt{x-3}} \quad (ف)$$

$$\begin{array}{l} \sqrt{x+1} \neq 0 \\ x \geq 0 \end{array} \Rightarrow 0 \leq x$$

$$x \neq 3$$

$$\Rightarrow D_f = [0, +\infty) - \{3\}$$

$$y = \frac{\cos x + 1}{\sin x + 1} \Rightarrow \sin x \neq -1 \Rightarrow \sin x \neq -1$$

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

$$y = \frac{\sin x}{\cos x + 1} \Rightarrow \cos x \neq -1 \Rightarrow \cos x \neq -1$$

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

$$y = \frac{\sin x + 1}{\sin^2 x - 3} \Rightarrow \sin^2 x - 3 \neq 0$$

$$\Rightarrow \sin^2 x \neq 3$$

$$\Rightarrow \sin x \neq \pm\sqrt{3}$$

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

$$y = \frac{\tan x + 1}{\cot x - 1} \Rightarrow \begin{array}{l} \sin \neq 0 \\ \cos \neq 0 \\ \tan \neq 1 \end{array}$$

$$D_f = \mathbb{R} - \left\{\frac{k\pi}{2}, 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}\right\}$$

$$y = \frac{1}{\sqrt{2|x-1| - \frac{1}{2}}}$$

$$2|x-1| - \frac{1}{2} > 0 \Rightarrow 2|x-1| > \frac{1}{2}$$

$$\Rightarrow |x-1| > \frac{1}{4}$$

$$\begin{array}{c} \frac{1}{4} \quad \frac{5}{4} \\ + \quad | \quad - \quad | \quad + \end{array}$$

$$(-\infty, \frac{1}{4}) \cup (\frac{5}{4}, +\infty)$$

$$y = \frac{1}{\sqrt{2|x-1| - \frac{1}{2}}}$$

$$2|x-1| - \frac{1}{2} > 0 \Rightarrow 2|x-1| > \frac{1}{2}$$

$$\Rightarrow |x-1| > \frac{1}{4}$$

$$(-\infty, \frac{1}{4}) \cup (\frac{5}{4}, +\infty)$$

$$y = \sqrt{\frac{|x|}{|x|}}$$

$$|x| \neq 0 \Rightarrow x \neq 0$$

$$D_f = (\mathbb{R} - \{0\})$$

$$y = \sqrt{4 - 2|x|}$$

$$4 - 2|x| \geq 0 \Rightarrow 2(2 - |x|) \geq 0$$

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

$$D_f = [-2, 2]$$