

$$3x^3 - x^2 - 11x - 4 \neq 0 \quad (\text{ب})$$

$$(3x^2 - 4x - 4)(x+1) \neq 0$$

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

$$4x^3 - 20x^2 + 25x - 10 \neq 0 \quad (\text{الف})$$

$$(4x-2)(5x-5)(x-1)$$

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

$$x - \sqrt{3x-2} \neq 0 \quad (\text{ب})$$

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

$$3x-2 \geq 0$$

$$3x \geq 2$$

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

$$D_f = \left[\frac{2}{3}, +\infty\right) - \left\{\sqrt{3x-2}\right\}_{x \in \mathbb{R}}$$

$$x - \sqrt{3-2x} \neq 0 \quad (\text{الف})$$

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

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

$$3-2x \geq 0$$

$$2 \geq 2x \quad \frac{3}{2} \geq x$$

$$D_f = \left(-\infty, \frac{3}{2}\right] - \left\{\sqrt{3-2x}\right\}_{x \in \mathbb{R}}$$

$$\sin x \neq -\frac{1}{5} \quad (\text{ب})$$

$$D_f = \mathbb{R} - \left\{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\right\}$$

$$2\cos x - 1 \neq 0 \quad (\text{الف})$$

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

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

$$2\sin^2 x \neq 3 \quad (\text{د})$$

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

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

$$D_f = \mathbb{R} - \left\{k\pi \pm \frac{\pi}{4}\right\}$$

$$x \neq k\pi + \frac{\pi}{4} \rightarrow \cot x \neq 1 \quad (\text{ج})$$

$$\sin x \neq 0$$

$$x \neq k\pi$$

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

$$(x-1)(x-5) < 0 \quad (\text{ب})$$

$$\begin{array}{c} 1 \quad 5 \\ + \quad - \quad + \\ \hline \end{array} \quad D_f = (1, 5)$$

$$(x-1)(x-5) > 0 \quad (\text{الف})$$

$$\begin{array}{c} 1 \quad 5 \\ + \quad - \quad + \\ \hline \end{array} \quad D_f = (-\infty, 1) \cup (5, +\infty)$$

$$(x-1)(x-6) \leq 0 \quad (\text{د})$$

$$\begin{array}{c} 1 \quad 6 \\ + \quad - \quad + \\ \hline \end{array} \quad D_f = [1, 6]$$

$$(x+1)(x+5) \geq 0 \quad (\text{ج})$$

$$\begin{array}{c} -1 \quad -5 \\ + \quad - \quad + \\ \hline \end{array} \quad D_f = (-\infty, -5], [-1, +\infty)$$

$$\frac{x^2-1}{(x-1)(x-4)} \geq 0$$

$$+ \frac{-1}{-1} \frac{+1}{-1} \frac{+0}{-1} \frac{+0}{-1} \quad D_f = (-\infty, -1], (4, +\infty)$$

$$x^2-1 \neq 0$$

$$x^2 \neq 1$$

$$x \neq \pm 1 \quad D_f = \mathbb{R} - \{\pm 1\}$$

$$16-x^2 > 0$$

$$-4 < x < 4 \quad 16 > x^2 \quad (4, +4)$$

$$|x| - 2 > 0$$

$$|x| > 2 \quad -2 > x > 2$$

$$|x| - 2 \neq 0 \quad |x| \neq 2 \quad x \neq \pm 2$$

$$(2x-4)(x-7) \geq 0 \quad + \frac{+}{+} \frac{+}{-} \frac{+}{-} \quad (-\infty, 2] \cup (7, +\infty)$$

$$\sqrt{16-x^2} > 0$$

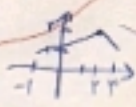
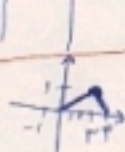
$$(-4, 4) \quad 16 > x^2 \quad x > 0$$

$$x \neq 0 \quad D_f = (0, 4) - \{0\}$$

	-1	0	1
$x^2 - x$	+	+	-
$x^2 + x$	+	-	+

$$-1 \quad + \quad - \quad - \quad +$$

$$\frac{x(x-1)}{x(x+1)}$$



(الف) (10)

(ب)

(ج)

(د)

$$(الف) (5) \quad \frac{(x-1)(x-2)}{x-4} < 0$$

$$- \frac{+}{+} \frac{+}{-} \frac{+}{-} \quad D_f = (-\infty, 1), (2, 4)$$

$$(الف) (6) \quad \frac{(x-1)(x-3)}{x^2-1} \geq 0$$

$$- \frac{+}{-} \frac{+}{-} \frac{+}{+} \quad D_f = [3, +\infty)$$

$$(الف) (7) \quad x(x-3) > 0$$

$$+ \frac{+}{+} \frac{+}{-} \frac{+}{-} \quad D_f = (-\infty, 0), (3, +\infty)$$

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

$$- \frac{+}{-} \frac{+}{-} \frac{+}{+} \quad (2, +\infty)$$

$$10-x > 0 \quad 10-x \neq 0 \quad x \neq 10$$

$$10 > x \quad (-\infty, 10)$$

$$D_f = (-\infty, 10) - \{10\}$$

$$(9) \quad \frac{x-f(x)}{f(x)} \geq 0$$

$$f(x) \neq 0 \quad D_f = [-2, 2] \setminus \{f(x)\}$$