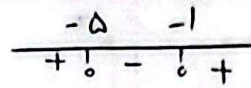
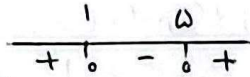
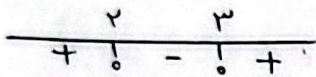


(1)

$$\text{الف) } (x-2)(x-3) > 0$$

$$\text{ب) } (x-1)(x-5) < 0$$

$$\text{ج) } (x+1)(x+5) > 0$$



(2)

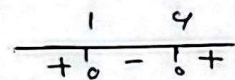
$$D_f = (-\infty, 2) \cup (3, +\infty)$$

$$D_f = (1, 5)$$

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

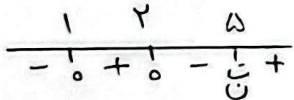
$$\text{د) } (x-1)(x-2) \leq 0$$

$$D_f = [1, 2]$$



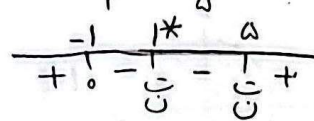
$$\text{الف) } \frac{(x-1)(x-2)}{x-5} < 0$$

$$D_f = (-\infty, 1) \cup (2, 5)$$



$$\text{ب) } \frac{(x-1)(x+1)}{(x-1)(x-5)} > 0$$

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



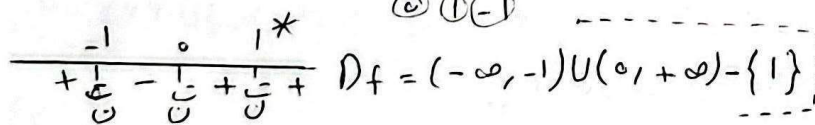
(3)

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

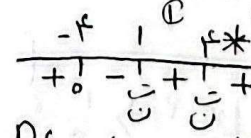
$$\text{① ① ①}$$

$$\text{ب) } \frac{x^2-14}{x^2-5x+4} > 0 \quad \frac{(x-4)(x+4)}{(x-1)(x-4)} > 0$$

(4)



$$D_f = (-\infty, -1) \cup (0, +\infty) - \{1\}$$



$$D_f = (-\infty, -4] \cup (1, +\infty) - \{4\}$$

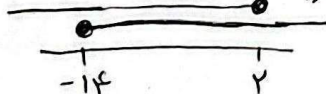
$$\text{الف) } 2-x > 0 \quad 4-\sqrt{2-x} > 0$$

$$x \leq 2$$

$$\sqrt{2-x} \leq 4$$

$$2-x \leq 16$$

$$x \geq -14$$



$$D_f = [-14, 2]$$

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

$$x > 2$$

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

$$\text{①}$$

$$x-2 \leq 9$$

$$\text{①} \cap \text{②}$$

$$x \leq 11 \quad \text{②}$$

$$D_f = [2, 11]$$

(5)

الف) $4 - 2x^2 \geq 0$
 $2x^2 \leq 4$
 $x^2 \leq 2$
 $-\sqrt{2} \leq x \leq \sqrt{2}$

ب) $3|x| - 9 \geq 0$
 $3|x| \geq 9$
 $|x| \geq 3$
 $x \leq -3$, $x \geq 3$

$D_f = (-\infty, -3] \cup [3, +\infty)$ (6)

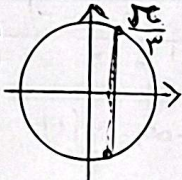
الف) $|x| \neq 3$
 $x \neq 3, -3$

$D_f = \mathbb{R} - \{\pm 3\}$

ب) $\sqrt{x} - 3 \neq 0$
 $\sqrt{x} \neq 3$
 $x \neq 9$

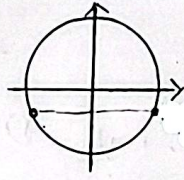
(7)

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



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

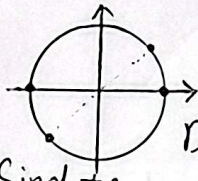
ب) $2\sin x + 1 \neq 0$
 $2\sin x \neq -1$
 $\sin x \neq -\frac{1}{2}$



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

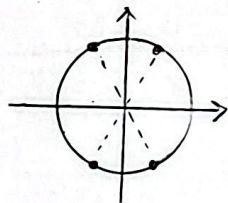
(8)

ج) $\cot x \neq 1$
 $\cot x = \frac{\cos x}{\sin x} \rightarrow \sin x \neq 0$
 $x \neq k\pi$



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

د) $4\sin^2 x - 3 \neq 0$
 $4\sin^2 x \neq 3$
 $\sin^2 x \neq \frac{3}{4}$
 $\sin x \neq \pm \frac{\sqrt{3}}{2}$



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

$2|x-2| - \frac{1}{4} > 0$

$2|x-2| > \frac{1}{4} \rightarrow |x-2| > \frac{1}{8}$ $\begin{cases} x-2 > \frac{1}{8} \rightarrow x > 2\frac{1}{8} \\ x-2 < -\frac{1}{8} \rightarrow x < 2\frac{7}{8} \end{cases}$ $D_f = (-\infty, 2\frac{1}{8}) \cup (2\frac{7}{8}, +\infty)$ (9)

الف) $4 - 2|x| \geq 0$

$2|x| \leq 4$

$|x| \leq 2 \rightarrow -2 \leq x \leq 2$

$D_f = [-2, 2]$

ب) $\frac{|x|}{|x|} \geq 0$

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

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

(10)