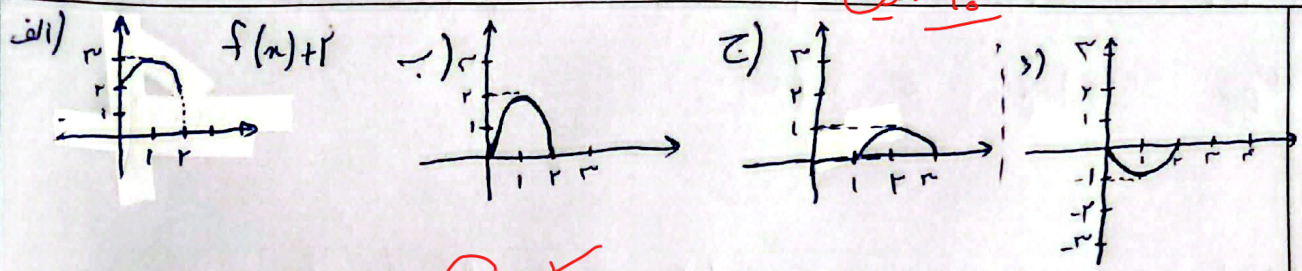


۲۰ آزمون



(۲) ✓

الف) $(x-2)(x-3) > 0 \Rightarrow x \in (-\infty, 2) \cup (3, +\infty)$

ب) $(x-1)(x-4) < 0 \Rightarrow x \in (1, 4)$

ج) $(x+1)(x+4) \geq 0 \Rightarrow x \in (-\infty, -4] \cup [-1, +\infty)$

د) $(x-6)(x-1) \leq 0 \Rightarrow x \in [1, 6]$

(۳) ✓

الف) $\frac{(x-2)(x-1)}{x-4} < 0 \Rightarrow x \in (-\infty, 1) \cup (2, 4)$

ب) $\frac{(x-1)(x+1)}{(x-4)(x-1)} \geq 0 \Rightarrow x \in (-\infty, -1] \cup (4, +\infty)$

(۴) ✓

الف) $y = \sqrt{\frac{x^2-1}{x(x^2-1)}} = \sqrt{\frac{x^2-1}{x(x-1)(x+1)}} \Rightarrow D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{(x-4)(x+4)}{(x-4)(x-1)}} \Rightarrow D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

(۵) ✓

الف) $2-x \geq 0 \Rightarrow x \leq 2$ I
 $x - \sqrt{2-x} \geq 0 \Rightarrow \sqrt{2-x} \leq x \Rightarrow 2-x \leq x^2 \Rightarrow -1 \leq x$ II $\Rightarrow D_f = [-1, 2]$

ب) $x-2 \geq 0 \Rightarrow x \geq 2$ I
 $x - \sqrt{x-2} \geq 0 \Rightarrow \sqrt{x-2} \leq x \Rightarrow x-2 \leq x^2 \Rightarrow x \leq 11$ II $\Rightarrow D_f = [2, 11]$

(۶) ✓

$$\text{الف) } f \cdot x^2 \geq 0 \Rightarrow x^2 \leq f \Rightarrow x^2 \leq r \Rightarrow -\sqrt{r} \leq x \leq \sqrt{r} \Rightarrow D_f = [-\sqrt{r}, \sqrt{r}]$$

$$\text{ب) } 3|x| - 9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow |x| \geq 3 \Rightarrow x \geq 3, x \leq -3 \Rightarrow \emptyset$$

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

(2) ✓

6

$$\text{الف) } |x| - r \neq 0 \Rightarrow |x| \neq r \Rightarrow x \neq \pm r \Rightarrow D_f = \mathbb{R} - \{\pm r\}$$

$$\text{ب) } \sqrt{x} - r \neq 0 \Rightarrow \sqrt{x} \neq r \Rightarrow x \neq 9 \text{ I}$$

$$x \geq 0 \text{ II} \Rightarrow D_f = [0, +\infty) - \{9\}$$

(2) ✓

7

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

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



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

$$\text{ج) } \cot x \neq 1$$

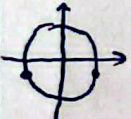
$$\sin x \neq 0, \cos x \neq 0$$



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

$$\text{ب) } 2\sin x \neq 1 \Rightarrow \sin x \neq \frac{1}{2}$$

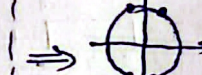
(2) ✓



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

$$\text{د) } \sin^2 x \neq r \Rightarrow \sin^2 x \neq \frac{r}{r} \Rightarrow$$

$$\Rightarrow \sin x \neq \pm \frac{\sqrt{r}}{r} \Rightarrow$$



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

8

$$2|x-2| - \frac{1}{f} > 0 \Rightarrow 2|x-2| > \frac{1}{f} \Rightarrow |x-2| > \frac{1}{f} \Rightarrow \begin{cases} x-2 > \frac{1}{f} \\ x-2 < -\frac{1}{f} \end{cases}$$

$$\Rightarrow x-2 > \frac{1}{f} \Rightarrow x > \frac{f}{f} \text{ I}$$

$$\Rightarrow x-2 < -\frac{1}{f} \Rightarrow x < \frac{f}{f} \text{ II}$$

$$\Rightarrow D_f = (-\infty, \frac{f}{f}) \cup (\frac{f}{f}, +\infty)$$

(2) ✓

9

$$\text{الف) } f - 2|x| \geq 0 \Rightarrow 2|x| \leq f \Rightarrow |x| \leq r \Rightarrow -r \leq x \leq r \Rightarrow D_f = [-r, r]$$

$$\text{ب) } \frac{|x|}{|x|} \geq 0, |x| \neq 0 \Rightarrow \frac{\oplus}{\ominus} \Rightarrow D_f = \mathbb{R}^+ \cup \mathbb{R}^-$$

(2) ✓

10