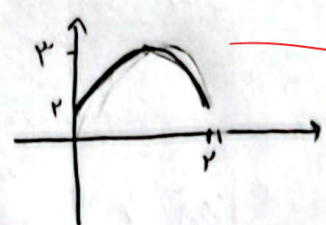
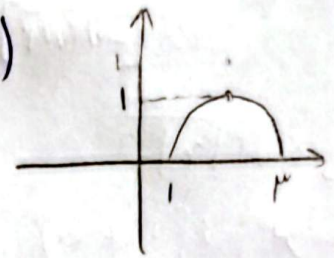


الف) $f(n) \rightarrow$



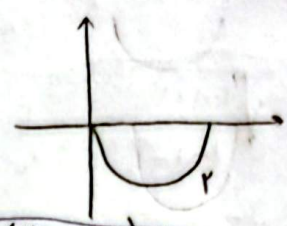
2.) $f(n-1)$



ب) $f(n)$

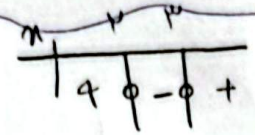


د) $-f(n)$



(2) ✓

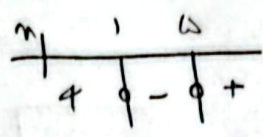
الف) $x^2 - \Delta x + 4 \geq 0$
 $(x-2)(x-2) \geq 0$



$\Rightarrow x \in (-\infty, 2) \cup (2, +\infty)$

(2)

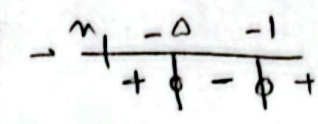
ب) $x^2 - 9x + \Delta < 0 \rightarrow (x-3)(x-1)$



$\Rightarrow x \in (1, 3)$

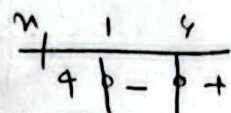
من صون دامت حواس

2.) $x^2 + 4x + \Delta \geq 0 \rightarrow (x+1)(x+1)$



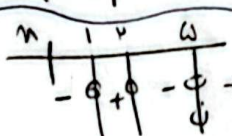
$\Rightarrow x \in (-\infty, -1] \cup [-1, +\infty)$

د) $x^2 - 7x + 4 \leq 0 \rightarrow (x-4)(x-1)$



$\Rightarrow x \in [1, 4]$

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



$\Rightarrow x \in (-\infty, 1) \cup (1, +\infty)$

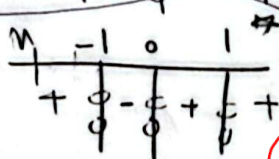
(2)

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



$x \in (-\infty, -1] \cup (1, +\infty)$

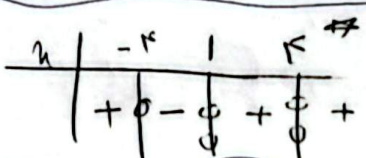
الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 4}} \geq 0$



$Df \subset (-\infty, -1) \cup (0, 1) \cup (2, +\infty)$

(2)

ب) $y = \sqrt{\frac{x^2 - 14}{x^2 - \Delta x + 14}} \Rightarrow \sqrt{\frac{(x-4)(x+4)}{(x-4)(x-1)}}$



$Df \subset (-\infty, -4] \cup (1, +\infty) - \{4\}$

الف) $y = \sqrt{x - \sqrt{x-1}}$

$x-1 \geq 0 \Rightarrow x \geq 1$ / $x - \sqrt{x-1} \geq 0 \Rightarrow (x \geq \sqrt{x-1})^2 \Rightarrow 14 \geq x-1$

$Df \subset [1, 15]$

$1 \geq x \geq 15$

(2) ✓

ب) $y = \sqrt{x - \sqrt{x-2}}$

$x-2 \geq 0 \Rightarrow x \geq 2$ / $x - \sqrt{x-2} \geq 0 \Rightarrow (x \geq \sqrt{x-2})^2 \Rightarrow 9 \geq x-2$

$Df \subset [2, 11]$

$2 \geq x \geq 11$

$11 \geq x$

الف) $y = \sqrt{r - 2m^2}$ $r - 2m^2 \geq 0 \rightarrow \frac{r}{2} \geq \frac{m^2}{1} \rightarrow \sqrt{\frac{r}{2}} \geq |m| \rightarrow \boxed{\sqrt{\frac{r}{2}} \geq |m|}$ (7)

$Df = [-\sqrt{\frac{r}{2}}, \sqrt{\frac{r}{2}}]$

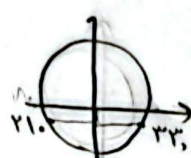
ب) $y = \sqrt{3|m| - 9}$ $3|m| - 9 \geq 0 \rightarrow \frac{3}{1}|m| \geq \frac{9}{1} \rightarrow |m| \geq 3$

$Df = (-\infty, -3] \cup [3, +\infty)$ $m \geq 3$
 $m \leq -3$

الف) $y = \sqrt[3]{\frac{|m|+1}{|m|-3}}$ $|m| - 3 \neq 0$ $|m| \neq 3$ $m \neq 3, -3$ $Df = \mathbb{R} - \{\pm 3\}$ (8)

ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $x \geq 0$ $\sqrt{x} - 3 \neq 0$ $\sqrt{x} \neq 3$ $x \neq 9$ $Df = [0, +\infty) - \{9\}$

الف) $y = \frac{\sin x}{x \cos x - 1} \neq 0$ $\cos x \neq \frac{1}{x}$  $Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{x}\}$ (9)

ب) $y = \frac{\cos x + 1}{x \sin x + 1} \neq 0$ $\sin x \neq -\frac{1}{x}$  $Df = \mathbb{R} - \{k\pi + \frac{\pi}{x}, k\pi + \frac{\pi}{x}\}$

2) $y = \frac{\tan x + 1}{\cot x - 1} \neq 0$ $\cot x \neq 1$ $\frac{\cos x}{\sin x} \neq 1$ $\cos x \neq \sin x$ $\sin x \neq 0 \rightarrow x \neq k\pi$ $Df = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$

ب) $y = \frac{\sin x + 1}{x \sin^2 x - 3} \neq 0$ $x \sin^2 x \neq 3$ $\sin^2 x \neq \frac{3}{x}$  $Df = \mathbb{R} - \{k\pi + \frac{\pi}{x}, k\pi + \frac{\pi}{x}\}$

الف) $y = \frac{1}{\sqrt{x|m-r| - \frac{1}{x}}} \rightarrow x|m-r| - \frac{1}{x} > 0 \rightarrow x|m-r| > \frac{1}{x} \rightarrow |m-r| > \frac{1}{x^2}$
 $\rightarrow x - r > \frac{1}{x^2}$ $x > \frac{1}{x^2}$ $Df = (-\infty, \frac{1}{x^2}) \cup (\frac{1}{x^2}, +\infty)$
 $\rightarrow -(x-r) > \frac{1}{x^2}$ $(x-r) < -\frac{1}{x^2}$ $x < -\frac{1}{x^2}$ (10)

ب) $y = \sqrt{x - 2|m|} \rightarrow x - 2|m| \geq 0$ $\frac{x}{2} \geq \frac{2|m|}{2}$ $x \geq |m|$
 $Df = [-x, x]$ $x \geq m, -x \leq m$

ب) $y = \sqrt{\frac{|m|}{|m|}}$ $Df = \mathbb{R} - \{0\}$

(+) ✓
(0) ✗
(-) ✓