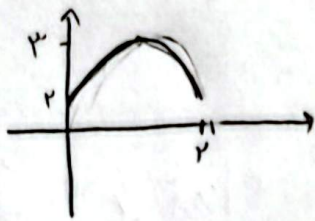
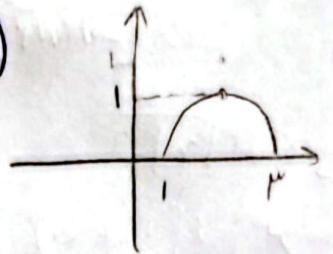


الف) $f(n) \rightarrow$



2.) $f(n-1)$

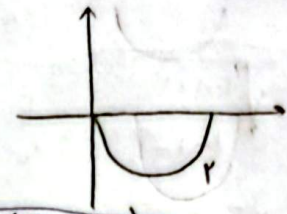


①

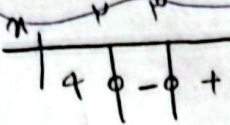
ب) $f(n)$



د) $-f(n)$



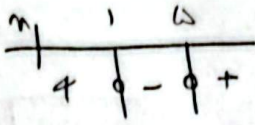
الف) $n^2 - \Delta n + 4 \geq 0$
 $(n-1)(n-3) \geq 0$



$\Rightarrow n \in (-\infty, 1) \cup (3, +\infty)$

②

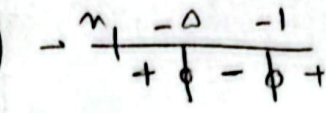
ب) $n^2 - 9n + \Delta < 0 \rightarrow (n-3)(n-1)$



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

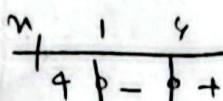
من صون دامت حواس

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



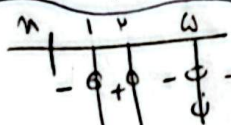
$\Rightarrow n \in (-\infty, -1] \cup [-1, +\infty)$

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



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

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



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

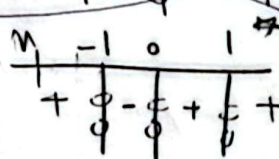
③

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



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

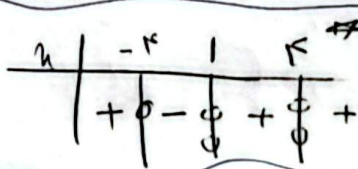
الف) $y = \sqrt{\frac{n^2 - 1}{n^2 - n}} \geq 0 \rightarrow \frac{n^2 - 1}{n^2 - n} \geq 0$



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

④

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



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

⑤

الف) $y = \sqrt{r - \sqrt{r-n}}$

$\rightarrow r-n \geq 0 \rightarrow \boxed{r \geq n} / r - \sqrt{r-n} \geq 0 \rightarrow (r \geq \sqrt{r-n})^2 \rightarrow 14 \geq r-n$

$Df \subseteq [4, 14]$

$\boxed{r \geq n \geq r-14}$

$\boxed{r \geq 14}$

⑥

ب) $y = \sqrt{r - \sqrt{n-r}} \rightarrow n-r \geq 0 \rightarrow \boxed{n \geq r} / r - \sqrt{n-r} \geq 0 \rightarrow (r \geq \sqrt{n-r})^2 \rightarrow 9 \geq n-r$

$\boxed{11 \geq n}$

$Df \subseteq [2, 11]$

$\boxed{11 \geq n \geq 2}$

الف) $y = \sqrt{4-2x^2}$ $4-2x^2 \geq 0 \rightarrow \frac{4}{2} \geq \frac{2x^2}{2} \rightarrow \sqrt{2} \geq |x| \rightarrow \boxed{[-\sqrt{2}, \sqrt{2}]}$ (7)

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

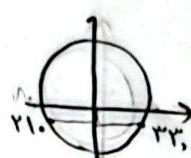
ب) $y = \sqrt{3|x|-9}$ $3|x|-9 \geq 0 \rightarrow \frac{3}{3}|x| \geq \frac{9}{3} \rightarrow |x| \geq 3$

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

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0$ $|x| \neq 3$ $x \neq 3, -3$ $Df = \mathbb{R} - \{\pm 3\}$ (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) $y = \frac{\sin x}{x \cos x - 1} \neq 0$ $\cos x \neq \frac{1}{x}$  $Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{3}\}$ (9)

ب) $y = \frac{\cos x + 1}{x \sin x + 1} \neq 0$ $\sin x \neq -\frac{1}{x}$  $Df = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4}\}$

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

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

3) $y = \frac{1}{\sqrt{x|x-r|-\frac{1}{r}}}$ $x|x-r|-\frac{1}{r} > 0 \rightarrow x|x-r| > \frac{1}{r} \rightarrow |x-r| > \frac{1}{rx}$
 $x-r > \frac{1}{rx}$ $x > \frac{1}{r}$ $Df = (-\infty, \frac{1}{r}) \cup (\frac{1}{r}, +\infty)$
 $-(x-r) > \frac{1}{rx}$ $(x-r) < -\frac{1}{rx}$ $x < \frac{1}{r}$

الف) $y = \sqrt{x-2|x|}$ $x-2|x| \geq 0$ $\frac{x}{2} \geq \frac{2|x|}{2}$ $x \geq |x|$ $Df = [-2, 2]$ $x \geq 2$ $-2 \leq x$ (10)

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

⊕ ✓
⊙ ✗
⊖ ✓