

1f, v2

الف) $x^2 - 4x + 4 > 0$

$(x-2)(x-2)$
 (2) (2)

ب) $x^2 - 4x + 4 < 0$

$(x-2)(x-2)$
 (2) (2)

ج) $x^2 + 4x - 4 \geq 0$

$(x+1)(x-4)$
 (-1) (4)

د) $x^2 - 4x + 4 \leq 0$

$(x-2)(x-2)$
 (2) (2)

+	-	+
2	2	

+	-	+
2	2	

+	-	+
2	2	

+	-	+
2	2	

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

$D_f = [2, 2]$

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

$D_f = [1, 4]$

$(n-2)(n-1)$

ب) $\frac{x^2 - 2x + 2}{x - 1} < 0$

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

أ) $(n-1)(n+1)$

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

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

أ) $\frac{x^2 - 1}{x^2 - 4x}$

$D_f = (-\infty, -1) \cup (0, 1) \cup (4, +\infty)$

ب) $y = \sqrt{\frac{x^2 - 14}{x^2 - 5x + 4}}$

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

أ) $y = \sqrt{4 - \sqrt{2 - x}}$

$\begin{aligned} 2 - x \geq 0 &\rightarrow x \leq 2 \\ 4 - \sqrt{2 - x} \geq 0 &\rightarrow \sqrt{2 - x} \leq 4 \rightarrow 2 - x \leq 14 \rightarrow x \geq -12 \end{aligned}$

ب) $y = \sqrt{2 - \sqrt{x - 2}}$

$\begin{aligned} x - 2 \geq 0 &\rightarrow x \geq 2 \\ 2 - \sqrt{x - 2} \geq 0 &\rightarrow \sqrt{x - 2} \leq 2 \rightarrow 4 \geq x - 2 \rightarrow x \leq 6 \end{aligned}$

الف) $y = \sqrt{4 - 2x^2}$

$\rightarrow 4 - 2x^2 \geq 0 \rightarrow 4 \geq 2x^2 \rightarrow 2 \geq x^2 \rightarrow \boxed{x \in [-\sqrt{2}, \sqrt{2}]}$
 $-\sqrt{2} \leq x \leq \sqrt{2}$

ب) ~~$y = \sqrt{3|x| - 9}$~~

(1) $y = \sqrt{3|x| - 9} \rightarrow 3|x| - 9 \geq 0 \rightarrow 3|x| \geq 9$
 $\rightarrow |x| \geq 3 \rightarrow \boxed{x \leq -3 \text{ or } x \geq 3}$

الن) $\sqrt[3]{\frac{|x|+1}{|x-3|}} \rightarrow \text{معرّف}$
 $\sqrt[3]{\frac{|x|+1}{|x-3|}} \neq 0 \rightarrow \text{معرّف}$
 $\boxed{x \neq 3}$

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

$[0, +\infty) - \{9\}$

ب) $\sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \rightarrow \text{معرّف}$

$D_f = \mathbb{R} - \{9\}$

$\sqrt{x} - 3 \neq 0 \Rightarrow x \neq 9$
 باید تعریف شود.

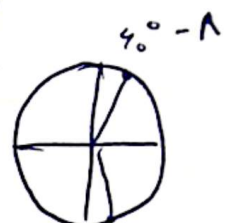
$\sqrt{x} \neq 3 \rightarrow \boxed{x \neq 9}$

ج.؟

$$\text{Case 1 } y = \frac{\sin u}{r \cos u - 1} \neq 0$$

$$r \cos u \neq 1 \rightarrow \cos u \neq \frac{1}{r}$$

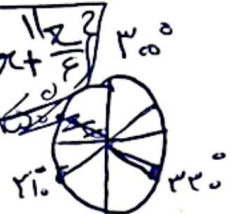
$$D_f = \mathbb{R} - \left\{ k\pi \pm \frac{\pi}{r} \right\}$$



$$\text{Case 2 } y = \frac{\cos u + 1}{r \sin u + 1} \neq 0$$

$$\rightarrow \sin u \neq -\frac{1}{r}$$

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



$$\text{Case 3 } y = \frac{\tan u + r}{\cot u - r} \neq 0$$

$$\cot u \neq r$$

$$\frac{\cos u}{\sin u} \neq r$$

$$\frac{\sin u}{\cos u} \neq \frac{1}{r}$$

$$\tan u \neq \frac{1}{r}$$

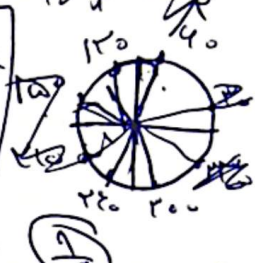
$$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{r} \right\}$$



$$\text{Case 4 } y = \frac{\sin^2 u - r}{\sin^2 u + r} \neq 0$$

$$\sin^2 u \neq \frac{r}{1+r}$$

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



$$y = \frac{\sqrt{1-x^2} - \frac{1}{r}}{\frac{x}{r} - \frac{1}{r}} \rightarrow r|x| - 1 - \frac{1}{r} > 0 \rightarrow r|x| - 1 > \frac{1}{r} \rightarrow |x - r| > \frac{1}{r}$$

$$D_f = \left(-\infty, \frac{1}{r} \right) \cup \left(\frac{1}{r}, +\infty \right)$$

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$$\text{Case 5 } y = \sqrt{1 - r|x|}$$

$$1 - r|x| \geq 0 \rightarrow |x| \leq \frac{1}{r}$$

$$\text{Case 6 } y = \frac{-x}{1-x^2} \rightarrow x \geq |x| \rightarrow x \leq -1$$

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

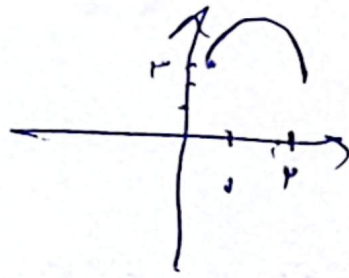
$$y = \sqrt{\frac{|x|}{|x|+1}} \rightarrow \text{Domain: } |x| \geq 0$$

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

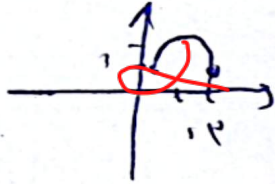
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الف) $f(x) + 2$



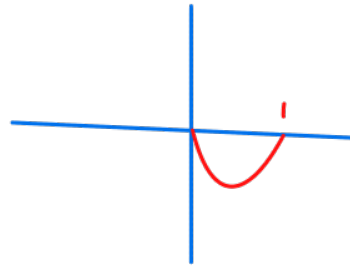
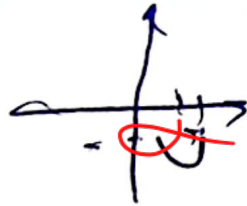
ب) $f(x)$



ج) $f(x-1)$



د) $f(x)$



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