

لکلاس: دفترانه A دهم

نام و نام خانوادگی: آناهید سدری

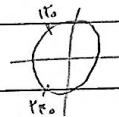
Subject:

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الف) $y = \frac{\sin x - 2}{2 \cos x + 1}$

$2 \cos x + 1 \neq 0$
 $2 \cos x \neq -1$



①

$DF = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$

$\cos x \neq -\frac{1}{2} \rightarrow 120^\circ, 240^\circ$

ب) $y = \frac{\sin x + 2}{\cos x - 1}$

$\cos x - 1 \neq 0$
 $\cos x \neq 1 \rightarrow \{0^\circ, 360^\circ\}$

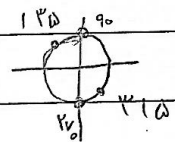
②

$DF = \mathbb{R} - \{2k\pi\}$

الف) $\frac{2 \sin x + 1}{\tan x + 1}$

$\tan x + 1 \neq 0$
 $\tan x \neq -1 \rightarrow 135^\circ, 225^\circ$

$\cos x \neq 0$



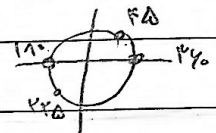
③

$DF = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{5\pi}{4}, 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \right\}$

ب) $\frac{\cos x + 1}{\cot x - 1}$

$\cot x - 1 \neq 0$
 $\cot x \neq 1 \rightarrow 45^\circ, 225^\circ$

$\sin x \neq 0$



$DF = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}, 2k\pi, 2k\pi + \pi \right\}$

الف) $\sin y = x^2 - 2$

$-1 \leq x^2 - 2 \leq 1$

$DF = [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$

$1 \leq x^2 \leq 3$

$1 \leq x \leq \sqrt{3} \rightarrow -\sqrt{3} \leq x \leq -1$

④

ب) $y = \arccos(\sqrt{x} - 3)$

$-1 \leq \sqrt{x} - 3 \leq 1$

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

$4 \leq x \leq 16$

$DF = [4, 16]$

⑤

الف) $\cos y = |x| - 3$

$-1 \leq |x| - 3 \leq 1$

$DF = [-2, 4] \cup [-4, -2]$

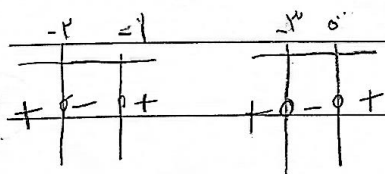
$2 \leq |x| \leq 4 \rightarrow -4 \leq x \leq -2$

⑥

ب) $y = \arcsin(x^2 + 3x + 1)$

$-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x + 1 \leq 1$

$-1 \leq x^2 + 3x + 1$
$0 \leq x^2 + 3x + 2$
$0 \leq (x+2)(x+1)$
$x \leq -2, -1$



⑦

$DF = [-2, -1] \cup [-1, 0]$

الف) $y = \log_{\frac{1}{2}} x^2 - 4$ $x^2 - 4 > 0$
 $x^2 > 4$
 $x > 2$ $x < -2$

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

ب) $y = \log_{\frac{1}{2}} \frac{2-|x|}{2}$ $2-|x| > 0$
 $2 > |x|$

$Df = (-2, 2)$ $-2 < x < 2$

الف) $y = \log_{x-2} \frac{5-x}{x-2}$ $5-x > 0$ $x-2 > 0$ $x-2 \neq 1$
 $5 > x$ $x > 2$ $x \neq 3$

$Df = (2, 5) - \{3\}$

ب) $y = \log_{x+2} \frac{x^2-1}{x+2}$ $x^2-1 > 0$ $x+2 > 0$ $x+2 \neq 1$
 $x^2 > 1$ $x > -2$ $x \neq -1$
 $x > 1, x < -1$

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

الف) $y = \log_{\frac{x^2-4x+4}{x-2}} \frac{x^2-4x+4}{x-2}$ $\frac{x^2-4x+4}{x-2} > 0$ $\frac{(x-2)(x-2)}{(x-2)} > 0$ $x-2 > 0$
 $x > 2$

$Df = (2, +\infty)$

ب) $y = \log_{x+5} \frac{x+2}{x-2}$ $\frac{x+2}{x-2} > 0$ $x+5 > 0$ $x+5 \neq 1$ $x \neq 0$
 $x > -5$ $x > -2$ $x \neq -4$ $x \neq 0$

$Df = (-5, +\infty) - \{-4, 0\}$
 $(-5, -2) \cup (-2, +\infty) - \{-4\}$

الف) $y = \sqrt{2 - \log_{\frac{1}{2}}(x-2)}$ $2 - \log_{\frac{1}{2}}(x-2) \geq 0$ $x-2 > 0$
 $x > 2$

$Df = (2, 10]$

ب) $\log(x \log_{\frac{1}{2}} x - 1)$ $x \log_{\frac{1}{2}} x - 1 > 0$
 $x \log_{\frac{1}{2}} x > 1$ $\log_{\frac{1}{2}} x > \frac{1}{x}$ $x > \sqrt{2}$

$Df = (\sqrt{2}, +\infty)$

الف) $\frac{2}{x^k + 1}$ $Df = \mathbb{R}$
 $x^k \neq -1$

ب) $\frac{2}{x^k - 1}$ $Df = \mathbb{R} - \{1\}$
 $x^k - 1 \neq 0$ $x^k \neq 1$ $x \neq \log_{\frac{1}{2}} 2$

ج) $\frac{2}{x^k - 1}$ $Df = \mathbb{R} - \{0\}$
 $x^k \neq 1$

د) $\frac{2}{x^k - 2}$ $Df = \mathbb{R} - \{\log_{\frac{1}{2}} 2\}$
 $x^k - 2 \neq 0$ $x^k \neq 2$ $x \neq \log_{\frac{1}{2}} 2$

شنت

$$\text{الف) } y = (x+1)!$$

$$x+1 \in \mathbb{N}$$

$$DF = \left\{ x/x = \frac{k-1}{x}, k \in \mathbb{N} \right\}$$

$$\frac{x+1}{x} \in \mathbb{N} - 1$$

$$x \in \frac{\mathbb{N}-1}{x}$$

10

$$\text{ب) } y = \left(\frac{x-1}{x-\omega} \right)!$$

$$\frac{x-1}{x-\omega} \in \mathbb{N}$$

$$x\mathbb{N} - \omega\mathbb{N} = x-1$$

$$x\mathbb{N} - \omega\mathbb{N} = x-1$$

$$DF = \left\{ x/x = \frac{\omega k - 1}{x - \omega}, k \in \mathbb{N} \right\}$$

$$x(\mathbb{N} - \omega) = x-1$$

$$x = \frac{x-1}{\mathbb{N} - \omega}$$

✓