نام و نام خانوادگی: کبریا ... پاسخنامه تشریحی تکلیف شماره ۵ کلاس ... B

19,8

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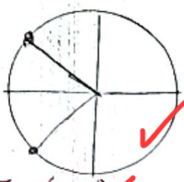
الف) $y = \dfrac{\sin x - 2}{2\cos x + 1}$

$2\cos x + 1 \neq 0$

$2\cos x \neq -1$

$\cos x \neq -\frac{1}{2} \rightarrow x \neq \{\frac{2\pi}{3}, \frac{4\pi}{3}\}$



$D_f = \mathbb{R} - \{2k\pi + \frac{2\pi}{3}$ و $2k\pi + \frac{4\pi}{3}\}$

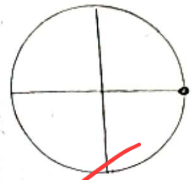
1,75

ب) $y = \dfrac{\sin x + 3}{\cos x - 1}$

$\cos x - 1 \neq 0$

$\cos x \neq -1$

$x \neq \{0, \pi\}$



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

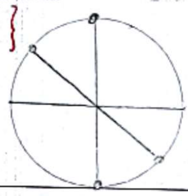
۲

الف) $y = \dfrac{2\sin x + 1}{\tan x + 1}$

$\tan x = \dfrac{\sin x}{\cos x} \rightarrow \cos x \neq 0 \rightarrow x \neq \{\frac{\pi}{2}, \frac{3\pi}{2}\}$

$\tan x \neq -1 \rightarrow x \neq \{\frac{3\pi}{4}, \frac{7\pi}{4}\}$

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



ب) $y = \dfrac{\cos x + 1}{\cot x - 1}$

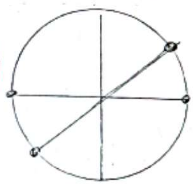
2

$\cot x = \dfrac{\cos x}{\sin x} \rightarrow \sin x \neq 0 \rightarrow x \neq \{\pi, 2\pi\}$

$(\cot x - 1 \neq 0)$

$\cot x \neq 1 \rightarrow x \neq \{\frac{\pi}{4}, \frac{5\pi}{4}\}$

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



۳

الف) $\sin y = x^2 - 2$

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

$1 \leq x^2 \leq 3 \rightarrow 1 \leq x \leq \sqrt{3}$

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

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

ب) $y = \arccos(\sqrt{x} - 3)$

$\sqrt{x} \rightarrow x \geq 0$

$-1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow$

$\sqrt{4} \leq \sqrt{x} \leq \sqrt{16}$

$4 \leq x \leq 16$

$D_f = [4, 16]$

۴

الف) $\cos y = |x| - 3$

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

$2 \leq |x| \leq 4 \rightarrow \begin{cases} 2 \leq x \leq 4 \\ -2 \geq x \geq -4 \end{cases}$

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

ب) $y = \arcsin(x^2 + 3x + 1)$

1,75

$-1 \leq x^2 + 3x + 1 \leq 1 \begin{cases} x^2 + 3x + 1 \leq 1 \\ x^2 + 3x + 1 \geq 0 \end{cases}$

$x^2 + 3x \leq 0$

$x(x+3) \leq 0 \rightarrow x^2 + 3x + 2 \geq 0 \quad (x+1)(x+2) \geq 0$

$-3, 0$: $+ \; - \; +$ $\rightarrow D_f = [-3, 0] \rightarrow D_f = \cancel{[\;]} \rightarrow (-\infty, -2] \cup [-1, +\infty)$

$-2, -1$: $+ \; - \; +$ $\quad D_f = (-\infty, -2] \cup [-1, +\infty)$

$\rightarrow [-3, -2] \cup [-1, 0]$

۵

الف) $y = \log_3^{x^2 - 4}$

$x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow x > 2$

$\qquad\qquad\qquad\quad \rightarrow x < -2$

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

ب) $y = \log_2^{2 - |x|}$

$2 - |x| > 0 \rightarrow |x| < 2 \begin{cases} x < 2 \\ x > -2 \end{cases}$

$D_f = (-2, 2)$

2

۶	الف) $y = \log_{x-3}^{5-x}$ $5-x>0 \rightarrow x<5$ $x-3 \neq 1 \rightarrow x \neq 4$ $x-3>0 \rightarrow x>3$ $D_f = (3,5) - \{4\}$	ب) $y = \log_{x+3}^{x^2-1}$ $x^2-1>0 \rightarrow x^2>1$ ⟶ $x>1$ ، $x<-1$ $x+3 \neq 1 \rightarrow x \neq -2$ $x+3>0 \rightarrow x>-3$ $D_f = (-3,-1) \cup (1,+\infty) - \{-2\}$ ۲
۷	الف) $y = \log \frac{x^2-4x+3}{x-3} \rightarrow \frac{x^2-4x+3}{x-3} > 0 \rightarrow$ $\frac{(x-3)(x-1)}{x-3} > 0 \rightarrow x-3 \neq 0 \rightarrow x \neq 3$ $\hookrightarrow x-1>0 \rightarrow x>1$ $D_f = (1,+\infty) - \{3\}$	ب) $y = \log_{x+5} \frac{x+3}{x-2} \rightarrow \frac{x+3}{x-2} > 0$ ⟶ $x<-3$ ، $x>2$ $x-2 \neq 0 \rightarrow x \neq 2$ $x+5>0 \rightarrow x>-5 \rightarrow x+5 \neq 1 \rightarrow x \neq -4$ $D_f = (-5,-3) \cup (2,+\infty) - \{-4\}$ ۲
۸	الف) $y = \sqrt{3-\log_2(x-2)} \rightarrow$ $x-2>0 \rightarrow x>2$ $x-2 \leq 8 \rightarrow x \leq 10$ $3-\log_2^{x-2} \geq 0 \rightarrow \log_2^{x-2} \leq 3$ $x \leq 10$ $D_f = (2,10]$	ب) $y = \log(2\log_2^x - 1)$ $x>0$ $2\log_2^x - 1 > 0 \rightarrow 2\log_2^x > 1 \rightarrow \log_2^x > \frac{1}{2}$ $x > 2^{\frac{1}{2}} \rightarrow x > \sqrt{2}$ $D_f = (\sqrt{2}, +\infty)$ ۲
۹	الف) $y = \frac{3}{4^x+1} \rightarrow 4^x+1 \neq 0$ $4^x \neq -1$ همواره برقرار است $D_f = \mathbb{R}$ ب) $y = \frac{3}{4^x-1} \rightarrow 4^x-1 \neq 0$ ، $4^x \neq 1 \rightarrow x \neq 0$ $D_f = \mathbb{R} - \{0\}$	پ) $y = \frac{3}{4^x-3} = 4^x-3 \neq 0$ $4^x \neq 3$ $x \neq \log_4^3$ $D_f = \mathbb{R} - \{\log_4^3\}$ ت) $y = \frac{3}{4^x-2} = \rightarrow 4^x-2 \neq 0$ $4^x \neq 2$ $x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \{\frac{1}{2}\}$ ۲
۱۰	الف) $y = (4x+1)! \rightarrow 4x+1 \in W \rightarrow 4x \in W-1$ $x \in \frac{W-1}{4}$ $D_f = \{x \mid x = \frac{k-1}{4}, k \in W\}$ ب) $y = (\frac{4x-2}{2x-5})! \rightarrow \frac{4x-2}{2x-5} \in W \rightarrow 4x-2 = 2Wx - 5W \rightarrow 4x - 2Wx = 2-5W$ $\rightarrow x = \frac{2-5W}{4-2W}$ $D_f = \{x \mid x = \frac{5k-2}{2k-4}, k \in W, k \neq \frac{5}{1}\}$	۲