

تکلیف شما ۵  
تالیف شما طالع است

۱۸،۵

۱) الف  $y = \frac{\sin x - 2}{2 \cos x + 1}$   $2 \cos x + 1 \neq 0$   $\cos x \neq -\frac{1}{2}$   $Df = \mathbb{R} - \{2K\pi + \frac{2\pi}{3}, 2K\pi + \frac{4\pi}{3}\}$

ب تالیف ما هر صفتی بود  
از سری بعد ۵  
غیر مخالف  
نی نبود

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۲) الف  $y = \frac{2 \sin x + 1}{\tan x + 1} = \tan x + 1 \neq 0$   $\tan x \neq -1$   
 $Df = \mathbb{R} - \{2K\pi + \frac{\pi}{4}, 2K\pi + \frac{5\pi}{4}, 2K\pi + \frac{3\pi}{4}, 2K\pi + \frac{7\pi}{4}\}$

ب  $y = \frac{\cos x + 1}{\cot x - 1} = \cot x - 1 \neq 0$   $\cot x \neq 1$   
 $Df = \mathbb{R} - \{2K\pi, 2K\pi + \frac{\pi}{2}, 2K\pi + \pi, 2K\pi + \frac{3\pi}{2}\}$

۳) الف  $\sin y = x^2 - 2$   $-1 \leq x^2 - 2 \leq 1$   $1 \leq x^2 \leq 3$   $1 \leq x \leq \sqrt{3}$   
 $Df = [1, \sqrt{3}]$   
 $[-\sqrt{3}, -1]$

ب  $y = \arccos(\sqrt{x} - 2)$   $-1 \leq \sqrt{x} - 2 \leq 1$   $\begin{cases} x \geq 0 \\ 2 \leq \sqrt{x} \leq 4 \end{cases} \rightarrow 4 \leq x \leq 16$   
 $\rightarrow Df = [4, 16]$

۴) الف  $\cos y = |x| - 3$   $-1 \leq |x| - 3 \leq 1$   $2 \leq |x| \leq 4$   $Df = [-4, -2] \cup [2, 4]$

ب  $y = \arcsin(x^2 + 3x + 1)$   $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow -2 \leq x(x+3) \leq 0$   
 $\begin{cases} x^2 + 3x \leq 0 \rightarrow 0, -3 \\ 0 \leq x^2 + 3x + 2 \rightarrow -2, -1 \end{cases} \rightarrow -3 \leq x \leq 0 \cup -2 \leq x \leq -1$   
 $Df = [-3, 0] \cup [-2, -1]$

۵) الف  $y = \log_3 \frac{x^2 - 4}{3}$   $\frac{x^2 - 4}{3} > 0 \rightarrow x^2 > 4$   $\begin{cases} x > 2 \\ -2 < x \end{cases}$   
 $3 > 0$   $3 \neq 1$   
 $Df = (-\infty, -2) \cup (2, +\infty)$

ب  $y = \log_2 \frac{2 - |x|}{2}$   $2 - |x| > 0$   $2 > |x|$   $Df = (-2, 2)$   
 $2 > 0$   $2 \neq 1$

$$4) \text{ الف) } y = \log \frac{x-2}{x-3} \quad \begin{cases} x-2 > 0 & x > 2 \\ x-2 > 0 & x > 3 \\ x-2 \neq 1 & x \neq 3 \end{cases} \quad Df = (2, 3) - \{3\}$$

$$\text{ب) } y = \log \frac{x^2-1}{x+2} \quad \begin{cases} x^2-1 > 0 & x^2 > 1 \rightarrow \begin{cases} x > 1 \\ x < -1 \end{cases} \\ x+2 > 0 & x > -2 \\ x+2 \neq 1 & x \neq -1 \end{cases} \quad Df = (-2, -1) \cup (1, +\infty) - \{-1\}$$

$$5) \text{ الف) } y = \log \frac{x^2-5x+2}{x-2} \quad \frac{x^2-5x+2}{x-2} \rightarrow \begin{matrix} 1, 2 \\ \rightarrow 2 \end{matrix} \quad \begin{matrix} 1 & 2 \\ - & + \\ \phi & + \end{matrix} \quad Df = (1, 2) \cup (2, +\infty) \quad \text{ب) } y = \log \frac{x+2}{x-2} \quad \begin{cases} \frac{x+2}{x-2} > 0 & -2, 2 \\ x+2 > 0 & x > -2 \\ x+2 \neq 1 & x \neq -3 \end{cases} \quad \begin{matrix} -2 & 2 \\ + & - \\ \phi & + \end{matrix} \quad Df = (-\infty, -2] \cup (2, +\infty)$$

$$\text{ب) } y = \log \frac{x+2}{x-2} \quad \begin{cases} \frac{x+2}{x-2} > 0 & -2, 2 \\ x+2 > 0 & x > -2 \\ x+2 \neq 1 & x \neq -3 \end{cases} \quad \begin{matrix} -2 & 2 \\ + & - \\ \phi & + \end{matrix} \quad Df = (-\infty, -2] \cup (2, +\infty) - \{-3\}$$

$$1) \text{ الف) } y = \sqrt{2 - \log \frac{(x-2)}{2}} \quad = 2 - \log \frac{x-2}{2} \geq 0 \rightarrow 2 \geq \log \frac{x-2}{2} \rightarrow x-2 \leq 1$$

$$Df = (-\infty, 1] \quad x \leq 1$$

$$\text{ب) } y = \log(2 \log \frac{x}{2} - 1) \quad x > 0 \quad x \log \frac{x}{2} > \frac{1}{2} \rightarrow x > \sqrt{2} \quad Df = (\sqrt{2}, +\infty)$$

$$9) \text{ الف) } y = \frac{2}{x^2+1} \rightarrow x^2+1 \neq 0 \quad x \neq \pm i \quad Df = \mathbb{R}$$

$$\text{ب) } y = \frac{2}{x-1} \rightarrow x-1 \neq 0 \quad x \neq 1 \quad Df = \mathbb{R} - \{1\}$$

$$\text{ج) } y = \frac{2}{x-2} \rightarrow x-2 \neq 0 \quad x \neq 2 \quad x \neq \log \frac{2}{2} \quad Df = \mathbb{R} - \{\log \frac{2}{2}\}$$

$$\text{د) } y = \frac{2}{x-3} \rightarrow x-3 \neq 0 \quad x \neq 3 \quad x \neq \log \frac{2}{2} \quad Df = \mathbb{R} - \{\log \frac{2}{2}\}$$

$$10) \text{ الف) } (x+1)! \quad x+1 \in \mathbb{W} \quad x \in \mathbb{W} - \frac{1}{e} \quad Df = \{x/x = K - \frac{1}{e}, K \in \mathbb{W}\}$$

$$\text{ب) } \left(\frac{x-2}{x-3}\right)! \quad \frac{x-2}{x-3} \in \mathbb{W} \rightarrow \frac{x-2}{x-3} = \frac{2x-2}{x-3} = \frac{2x-2}{x-3} \rightarrow x = \frac{2-2x}{2-2x}$$

$$Df = \{x/x = \frac{2K-2}{2K-3}, K \in \mathbb{W}\}$$