

الف) $y = \log \frac{x^2 - 4x + 3}{x - 3} \rightarrow \frac{(x+1)(x-1)}{(x-3)} > 0$

$\frac{1}{-1} + \frac{1}{1} + \frac{1}{3}$

$D_f = (-1, 3)$

$x+1 > 0 \rightarrow x > -1$

$x-1 > 0 \rightarrow x > 1$

$x-3 > 0 \rightarrow x > 3$

ب) $y = \log \frac{x+1}{x+5}$

$\frac{x+1}{x+5} > 0 \rightarrow x > -1$
 $x+5 > 0 \rightarrow x > -5$
 $x+5 \neq 0 \rightarrow x \neq -5$

$D_f = (-5, -1) \cup (-1, +\infty)$

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الف) $y = \sqrt{3 - \log_2^{x-1}}$

$x-1 > 0 \rightarrow x > 1$

$3 - \log_2^{x-1} \geq 0 \rightarrow \log_2^{x-1} \leq 3 \rightarrow x-1 \leq 2^3 \rightarrow x \leq 9$

ب) $y = \log (2 \log_3^x - 1)$

$x > 0$

$2 \log_3^x - 1 > 0 \rightarrow 2 \log_3^x > 1$

$\log_3^x > \frac{1}{2} \rightarrow x > 3^{1/2} \rightarrow x > \sqrt{3}$

$D_f = (\sqrt{3}, +\infty)$

الف) $y = \frac{x}{x^2+1} \rightarrow x^2+1 \neq 0$
 $x^2 \neq -1$
 معادله برقرار است!

ب) $y = \frac{x}{x^2-1} \rightarrow x^2-1 \neq 0$
 $x^2 \neq 1 \rightarrow x \neq \pm 1$
 $D_f = \mathbb{R} - \{0\}$

ج) $y = \frac{x}{x^2-1} \rightarrow x^2-1 \neq 0$
 $x^2 \neq 1 \rightarrow x \neq \pm 1$
 $\hookrightarrow x \neq \log_2^1$
 $D_f = \mathbb{R} - \{\log_2^1\}$

د) $y = \frac{x}{x^2-1} \rightarrow x^2-1 \neq 0 \rightarrow x \neq \pm 1$
 $x \neq \log_2^1$
 $D_f = \mathbb{R} - \{\log_2^1\}$

الف) $y = (x+1)!$
 $x+1 \in \mathbb{N} \rightarrow x \in -1 \rightarrow x \in \frac{1}{k}$
 $D_f = \{x \mid x = \frac{1}{k}, k \in \mathbb{N}\}$

ب) $y = (\frac{x-1}{x-5})!$

$\frac{x-1}{x-5} \in \mathbb{N} \rightarrow x-1 = k(x-5)$
 $x-1 = kx-5k$
 $x = \frac{-5k+1}{1-k}$

این هم مثل الف بایز بنویس

$D_f = \{x \mid x = \frac{-5k+1}{1-k}, k \in \mathbb{N}\}$

آواخانی - دایره هم - تکلیف شما 5

1, 75

الف) $y = \frac{\sin x - 2}{2 \cos x + 1}$ $2 \cos x + 1 \neq 0$
 $2 \cos x \neq -1$
 $\cos x \neq -\frac{1}{2}$
 $D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3} \right\}$ $D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \right\}$

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

سوال 2

الف) $y = \frac{2 \sin x + 1}{\tan x + 1}$ $\tan x + 1 \neq 0$
 $\tan x \neq -1$
 $\tan x = \frac{\sin x}{\cos x} \rightarrow \cos x \neq 0 \rightarrow x \neq (k\pi + \frac{\pi}{2})$
 $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right\}$

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

2

الف) $\sin y = x^2 - 2$ $x^2 - 2 \leq 1 \rightarrow x^2 \leq 3 \rightarrow \sqrt{3} \leq x \leq \sqrt{3}$
 $-1 \leq \sin y \leq 1$
 $x^2 - 2 \geq -1 \rightarrow x^2 \geq 1 \rightarrow x \leq -1$
 $D_f = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$ $D_f = (-1, 1)$

ب) $y = \arccos(\sqrt{x} - 3)$ $D_f = [4, 14]$
 $\sqrt{x} \geq 0 \rightarrow x \geq 0$
 $-1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow 4 \leq x \leq 16$

سوال 3

1, 5

الف) $\cos y = |x| - 3$ $D_f = (-5, -2] \cup [2, 4]$
 $-1 \leq \cos y \leq 1$
 $|x| - 3 \geq -1 \rightarrow |x| \geq 2 \rightarrow x \leq -2$
 $|x| - 3 \leq 1 \rightarrow |x| \leq 4 \rightarrow -4 \leq x \leq 4$

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

سوال 4

2

الف) $y = \log_{x-3} 2x$ $2x - 3 > 0 \rightarrow x > \frac{3}{2}$
 $x - 3 > 0 \rightarrow x > 3$
 $2x - 3 \neq 1 \rightarrow x \neq 2$
 $D_f = (3, \infty) - \{2\}$

ب) $y = \log_{x+3} x^2 - 1$ $x^2 - 1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1$
 $x + 3 > 0 \rightarrow x > -3$
 $x + 3 \neq 1 \rightarrow x \neq -2$
 $D_f = (-3, 1) - \{-2\}$

سوال 6

2

سوال 5 و 6 را با جافه بستم!

الف) $y = \log_3 x^2 - 4$ $x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow x > 2$
 $x < -2$
 $D_f = (-\infty, -2) \cup (2, \infty)$
 $D_f = \mathbb{R} - [-2, 2]$

ب) $y = \log_2 \frac{1}{x}$ $1 - |x| > 0 \rightarrow 1 > |x|$
 $-1 < x < 1$
 $D_f = (-1, 1)$

سوال 5

1, 75