

نام و نام خانوادگی سروش اخوان پاسخنامه تشریحی تکلیف شماره ۵ ... کلاس پسر دهم B

الف) $2\cos x + 1 \neq 0 \Rightarrow 2\cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{2}$
 $\Rightarrow x \neq \{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\} \Rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\}$
 ب) $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow D_f = \mathbb{R} - \{2k\pi\}$

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الف) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \Rightarrow x \neq \{3\frac{\pi}{4}, 5\frac{\pi}{4}\}$
 $\tan x \in \mathbb{R} \Rightarrow \cos x \neq 0 \Rightarrow x \neq \{\frac{\pi}{2}, \frac{3\pi}{2}\}$
 $\Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2}\}$
 ب) $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1 \Rightarrow D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{4}\}$
 $\cot x \in \mathbb{R} \Rightarrow \sin x \neq 0$

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الف) $\sin y = x^2 - 2 \Rightarrow -1 \leq x^2 - 2 \leq 1 \Rightarrow x^2 \leq 3 \quad 1 \leq x^2 \Rightarrow 1 \leq x^2 \leq 3$
 $\Rightarrow 1 \leq x \leq \sqrt{3} \text{ و } -\sqrt{3} \leq x \leq -1 \Rightarrow D_f = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$
 ب) $\arccos(\sqrt{x} - 3) \Rightarrow -1 \leq \sqrt{x} - 3 \leq 1 \Rightarrow 2 \leq \sqrt{x} \leq 4$
 $\Rightarrow 4 \leq x \leq 16 \Rightarrow D_f = [4, 16]$

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الف) $\cos y = |x| - 3 \Rightarrow -1 \leq |x| - 3 \leq 1 \Rightarrow 2 \leq |x| \leq 4 \Rightarrow 2 \leq x \leq 4$
 $\text{و } -4 \leq x \leq -2 \Rightarrow D_f = [-4, -2] \cup [2, 4]$
 ب) $y = \arcsin(x^2 + 3x + 1) \Rightarrow -1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow -2 \leq x^2 + 3x \leq 0$
 $\Rightarrow -2 \leq x(x+3) \leq 0$
 $0, -5, 2 \text{ ریشه ها}$
 $\frac{-3}{+} \quad \frac{-2}{+} \quad \frac{-1}{+}$
 $-2, -1 \geq \frac{0}{-} \text{ ریشه ها}$
 $[-3, 0] \cap ((-\infty, -2] \cup [1, +\infty))$

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$\Rightarrow D_f = [-3, -2] \cup [-1, 0]$

الف) $\log_{\frac{1}{3}}(x^2 - 4) \Rightarrow x^2 - 4 > 0 \Rightarrow x^2 > 4 \Rightarrow x > 2 \text{ و } x < -2$

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

ب) $y = \log_{\frac{1}{3}}(-|x|) \Rightarrow -|x| > 0 \Rightarrow 2 > |x| \Rightarrow 2 > x > -2$

$\Rightarrow D_f = (-2, 2)$

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الف) $y = \log_{x-2} (x-1)$ $\Rightarrow x-2 > 0 \Rightarrow x > 2$, $x-2 \neq 1 \Rightarrow x \neq 3$ $\Rightarrow D_f = (3, \infty) - \{3\}$ ✓ ب) $y = \log_{x+2} (x^2-1)$ $\Rightarrow x^2-1 > 0 \Rightarrow x^2 > 1 \Rightarrow x > 1$, $x \neq -1$ $x+2 > 0 \Rightarrow x > -2$, $x+2 \neq 1 \Rightarrow x \neq -1$ (y) $\Rightarrow D_f = (-2, -1) \cup (1, +\infty) - \{-1\}$ ✓	6
$y = \log_{x-2} (x^2-4x+3)$ $\Rightarrow \frac{(x-1)(x-3)}{x-2} > 0$, $\frac{1}{x-2} + \frac{1}{x-3} > 0$ $\Rightarrow D_f = (1, +\infty) - \{2\}$ ✓ ب) $y = \log_{x+2} \frac{x+3}{x-2}$ $\Rightarrow \frac{x+3}{x-2} > 0 \Rightarrow x \neq 2$, $x > 2$, $x \neq -2$ (y) $x+2 > 0 \Rightarrow x > -2$, $x+2 \neq 1 \Rightarrow x \neq -1$ $\Rightarrow D_f = (-2, -1) \cup (2, +\infty) - \{-1\}$ ✓	7
الف) $y = \sqrt{3 - \log_{x-2} (x-1)}$ $\Rightarrow x-2 > 0 \Rightarrow x > 2$ $3 - \log_{x-2} (x-1) \geq 0 \Rightarrow 3 \geq \log_{x-2} (x-1) \Rightarrow x-2 \leq 1 \Rightarrow x \leq 3$ $\Rightarrow D_f = [2, 3]$ ✓ ب) $y = \log_{x-2} (2 \log_{x-2} x - 1)$ $\Rightarrow x > 0$ $2 \log_{x-2} x - 1 > 0 \Rightarrow 2 \log_{x-2} x > 1 \Rightarrow \log_{x-2} x > \frac{1}{2}$ $\Rightarrow x > \sqrt{2} \Rightarrow D_f = (\sqrt{2}, +\infty)$ ✓ (y)	8
الف) $y = \frac{x}{x^2+1}$ $\Rightarrow x^2+1 \neq 0 \Rightarrow x^2 \neq -1 \Rightarrow D_f = \mathbb{R}$ ✓ ب) $y = \frac{x}{x^2-1}$ $\Rightarrow x^2-1 \neq 0 \Rightarrow x^2 \neq 1 \Rightarrow x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$ (y) ج) $y = \frac{x}{x^2-2}$ $\Rightarrow x^2-2 \neq 0 \Rightarrow x^2 \neq 2 \Rightarrow x \neq \pm \sqrt{2} \Rightarrow D_f = \mathbb{R} - \{\pm \sqrt{2}\}$ ✓ د) $y = \frac{x}{x^2-3}$ $\Rightarrow x^2-3 \neq 0 \Rightarrow x^2 \neq 3 \Rightarrow x \neq \pm \sqrt{3} \Rightarrow D_f = \mathbb{R} - \{\pm \sqrt{3}\}$ ✓	9
الف) $y = (x+1)!$ $\Rightarrow x+1 \in \mathbb{N} \Rightarrow x \in \mathbb{N} - 1 \Rightarrow x \in \frac{\mathbb{N}-1}{1}$ $\Rightarrow D_f = \{x \mid x \in \frac{\mathbb{N}-1}{1}, K \in \mathbb{N}\}$ ✓ ب) $y = (\frac{x-2}{x-3})!$ $\Rightarrow \frac{x-2}{x-3} \in \mathbb{N}$... (y) ...	10

$$\Rightarrow x = \frac{-\infty + 1}{1 \cdot \infty - 1} \Rightarrow D_f = \{x \mid x \in \frac{\infty - 1}{1 \cdot \infty - 1}, K \in \mathbb{N}\}$$