

نام و نام خانوادگی علی حسینیان پاسخنامه تشریحی تکلیف شماره ۳۲ کلاس پسر - B

$$\text{الف) } y = \frac{x + 3}{2x^3 + 3x^2 - 4x + 3} \rightarrow 2x^3 + 3x^2 - 4x + 3 \neq 0, \quad 2 + 3 + (-4) + 3 = 0 \Rightarrow \frac{2x^3 + 3x^2 - 4x + 3}{2x^3 - 2x^2} \left| \frac{x-1}{2x^2 + 0x - 3} \right.$$

$$b) y = \frac{x+3}{2x^3 + 9x^2 + 11x + 3} \Rightarrow (x+3)(x-\frac{1}{2})(x-1) \neq 0 \quad D_{\text{def}} = \mathbb{R} - \{-3, \frac{1}{2}, 1\}$$

$$\begin{aligned}
 & \downarrow \\
 & x^2 + 9x + 1 \cdot x + 1 \neq 0 \rightarrow x + 1 = 9 + x \rightarrow \frac{x^2 + 9x + 1 + x}{x^2 + x} \cdot \frac{x+1}{x^2 + 9x + 1} \\
 & \hookrightarrow x^2 + 10x + 2 \neq 0 \rightarrow x^2 + 10x + 25 - 23 \\
 & \quad (x + \frac{1}{2})(x + \frac{1}{2})(x + \frac{1}{2}) \neq 0 \neq (x + \frac{1}{2})(x + 5) \\
 & \quad \downarrow \\
 & \underline{D_y = \{ \mathbb{R} - \frac{1}{2}, -5, -\frac{1}{2} \}}
 \end{aligned}$$

الف) $y = \frac{x+3}{x^3-2x^2+2x-1} \rightarrow x^3-2x^2+2x-1 \neq 0 \rightarrow 1-2+2-1=0 \Rightarrow \frac{x^3-2x^2+2x-1}{x^3-x^2} \cdot \frac{x-1}{x^2-x+1}$

$\Rightarrow$ نتیجہ $\Rightarrow x^3-2x^2+2x-1 \neq 0 \Rightarrow x \neq 1 \Rightarrow D = D - \{1\}$

$b^2 \text{ یا } c = 1 - 2 = -1$

$$\text{b) } y = \sqrt{\frac{x+3}{x^3 - 2x^2 + 2x - 1}} \quad \begin{array}{l} x^3 - 2x^2 + 2x - 1 \neq 0 \Rightarrow x \neq 1 \\ \frac{x+3}{x^3 - 2x^2 + 2x - 1} \geq 0 \end{array}$$

x	$-\infty$	1	$+\infty$
$x+3$	$-$	$+$	$+$
$x^3 - 2x^2 + 2x - 1$	$+$	$-$	$+$

$\Rightarrow x = (-\infty, -3] \cup (1, +\infty)$
 $\Rightarrow \mathcal{D}_f = (-\infty, -3] \cup (1, +\infty)$

$$y = \frac{\gamma}{x^\gamma - \delta |x-1| - \gamma x + \delta}$$

$x^\gamma - \delta |x-1| - \gamma x + \delta \neq 0 \rightarrow x \geq 1 \rightarrow x^\gamma - \delta x + \delta - \gamma x + \delta \neq 0$
 $x^\gamma - \gamma x + 1 \neq 0 \rightarrow (x-\gamma)(x-\delta) \neq 0 \rightarrow x \neq \delta$
 $\hookrightarrow x \neq \gamma$
 $\hookrightarrow x \leq 1 \rightarrow x^\gamma + \delta x - \delta - \gamma x + \delta \neq 0$
 $x^\gamma + \gamma x \neq 0 \rightarrow x(x+\gamma) \neq 0 \rightarrow x \neq 0$
 $\hookrightarrow x \neq -\gamma$

$D_f = \mathbb{R} - \{0, -\gamma, \gamma, \delta\}$

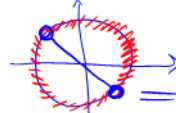
الف) $y = \sqrt{[-x] - 2}$ $[-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow D_f = (-\infty, -1)$

$$\text{b) } y = \frac{\Delta x^2 + 6}{[x]^2 - 2[x] - 3}$$

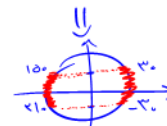
$$\text{الف) } y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{2}{x}\right]} \rightarrow \left[x - \frac{1}{x}\right] + \left[x + \frac{2}{x}\right] \geq 0 \rightarrow \left[x\right] - \frac{1}{x} + \left[x\right] + \frac{2}{x} \geq 0 \quad \forall \left[x\right] \geq -\frac{1}{x} \rightarrow \left[x\right] \geq -\frac{1}{x}$$

$\downarrow$
 $D_f = [0; +\infty)$

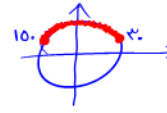
$$b) y = \sqrt{\left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right]} \rightarrow \left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right] \geq 0 \rightarrow \left[x - \frac{1}{x}\right] \geq -\left[\frac{1}{x} - x\right] \Rightarrow \mathcal{D} = \{x / x = \frac{1}{x} + k, k \in \mathbb{Z}\}$$

الف) $y = \frac{\cot x + 1}{\tan x + 1}$ $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$  $\Rightarrow D_f = \mathbb{R} - \{\frac{3}{4}\pi + k\pi\}$

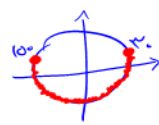
ب) $y = \sqrt{1 - 4 \sin^2 x}$ $1 - 4 \sin^2 x \geq 0 \rightarrow 1 \geq 4 \sin^2 x \rightarrow \frac{1}{4} \geq \sin^2 x \rightarrow \frac{1}{2} \geq \sin x \geq -\frac{1}{2}$

$D_f = [k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2}]$ $\Leftarrow$ 

الف) $y = \sqrt{2 \sin x - 1}$

$2 \sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{2} \Rightarrow \sin x \geq \frac{1}{2}$ $D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$ $\Leftarrow$ 

ب) $y = \sqrt{1 - 2 \cos x}$

$1 - 2 \cos x \geq 0 \Rightarrow 1 \geq 2 \cos x \Rightarrow \frac{1}{2} \geq \cos x$ $D_f = [2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3}]$ 

الف) $y = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow -2 \leq x^2 + 3x \leq 0 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$ $x = [-3, 0]$

ب) $\cos y = \sqrt{5 - 2x}$

$0 - 2x \geq 0 \rightarrow 0 \geq 2x \Rightarrow 0 \geq x$ $-1 \leq \sqrt{5 - 2x} \leq 1 \rightarrow 0 - 2x \leq 1 \rightarrow -\frac{1}{2} \leq x \rightarrow x \leq \frac{1}{2}$ $D_f = [-\frac{1}{2}, 0] \cup [1, 1]$ $x = (-\infty, -\frac{1}{2}] \cup [1, +\infty)$

$\Rightarrow D_f = [-\frac{1}{2}, 0]$

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

ب) $y = \log_{\frac{1}{2}} \frac{(1 - \log_{\frac{1}{2}} x)}{x}$ $1 - \log_{\frac{1}{2}} x > 0 \rightarrow 1 > \log_{\frac{1}{2}} x \rightarrow x < 1$ $x = (\frac{1}{2}, +\infty) \Rightarrow D_f = (\frac{1}{2}, +\infty)$

الف) $y = \sqrt{2^{x-x^2} - 1}$ $2^{x-x^2} - 1 \geq 0 \rightarrow 2^{x-x^2} \geq 1 \Rightarrow x - x^2 \geq 0 \rightarrow x^2 - x \leq 0$ $(x-1)(x-0) \leq 0$ $D_f = [0, 1]$ $\Leftarrow$ 

ب) $y = \left(\frac{3x+5}{2x+4} \right)!$ $\frac{3x+5}{2x+4} \in \mathbb{W}$ $k = \frac{3x+5}{2x+4} \Rightarrow x = -\frac{k-5}{k-3}$ $D_f = \{x \mid x = -\frac{k-5}{k-3}, k \in \mathbb{W}\}$