

۵/۶/۶

یازدهم دهم

« بنام خدا »

پریا کل جتئی

۱) داخله توابع زیر را بدست آورید.

$$\text{الف) } y = \frac{x+3}{2x^3+3x^2-8x+3} \quad 2x^3+3x^2-8x+3 \neq 0 \rightarrow (x-1)(x+3)(2x-1) \neq 0 \rightarrow$$

$$D_f = \mathbb{R} - \left\{ -3, \frac{1}{2}, 1 \right\}$$

$$\text{ب) } y = \frac{x+3}{2x^3+9x^2+10x+3} \quad 2x^3+9x^2+10x+3 \neq 0 \rightarrow (x+1)(2x+1)(x+3) \neq 0 \rightarrow$$

$$D_f = \mathbb{R} - \left\{ -3, -1, -\frac{1}{2} \right\}$$

۲) داخله توابع زیر را بدست آورید.

$$\text{الف) } y = \frac{x+3}{x^3-2x^2+2x-1} \quad x^3-2x^2+2x-1 \neq 0 \rightarrow (x-1)(x^2-x+1) \neq 0$$

$$D_f = \mathbb{R} - \{1\}$$

$$\Delta = 1-4 < 0 \quad \text{ریشه ندارد}$$

$$\text{ب) } y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \quad \frac{x+3}{x^3-2x^2+2x-1} \geq 0 \rightarrow \frac{-3}{x} \geq \frac{1}{x^3-2x^2+2x-1}$$

$$D_f = (-\infty, -3] \cup (1, +\infty)$$

۳) داخله تابع $y = \frac{2}{x^2-\delta|x-1|-2\alpha+\delta}$ را بدست آورید.

$$x^2-\delta|x-1|-2\alpha+\delta \neq 0 \rightarrow \textcircled{1} \text{ if } x \geq 1 \rightarrow x^2-\delta(x-1)-2\alpha+\delta \neq 0$$

$$\searrow \textcircled{2} \text{ if } x < 1 \rightarrow x^2-\delta(1-x)-2\alpha+\delta \neq 0$$

$$\textcircled{1} x^2-\delta x + \delta - 2\alpha + \delta \neq 0 \rightarrow (x-\delta)(x-\alpha) \neq 0 \rightarrow x \neq \delta, \alpha$$

$$\textcircled{2} x^2+\delta x - \delta - 2\alpha + \delta \neq 0 \rightarrow x(x+\delta) \neq 0 \rightarrow x \neq -\delta, 0 \quad \leadsto D_f = \mathbb{R} - \{\delta, 0, \alpha, -\delta\}$$

۴) داخله توابع زیر را بدست آورید.

$$\text{الف) } y = \sqrt{[-x]-2} \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$$

$$D_f = (-\infty, -2]$$

$$\text{ب) } y = \frac{\delta x^2+6}{[x]^2-2[x]-3} \rightarrow [x]^2-2[x]-3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0 \rightarrow$$

$$[x] \neq -1 \rightarrow x \neq [-1, 0) / [x] \neq 3 \rightarrow x \neq [3, 4)$$

$$D_f = (-\infty, -1) \cup [0, 2) \cup [4, +\infty)$$

(د) د احنه توابع زیر را بباید.

$$\text{الف) } y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]} \rightarrow \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 \rightarrow$$

$$\left[x + 1 - 1 - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 \rightarrow 2\left[x + \frac{2}{3}\right] \geq 1 \rightarrow \left[x + \frac{2}{3}\right] \geq \frac{1}{2} \rightarrow$$

$$x + \frac{2}{3} \geq \frac{1}{2} \rightarrow x \geq \frac{1}{6} \rightarrow D_f = \left[\frac{1}{6}, +\infty\right)$$

$$\text{ب) } y = \sqrt{\left[x - \frac{1}{3}\right] + \left[-x + \frac{1}{3}\right]} \rightarrow [a] + [-a] \geq 0 \rightarrow a \in \mathbb{Z}$$

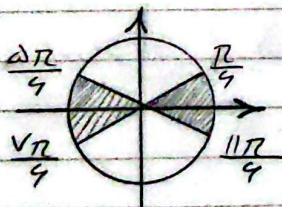
$$\rightarrow x - \frac{1}{3} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{3} \rightarrow D_f = \left\{x \mid x = \frac{3k+1}{3}, k \in \mathbb{Z}\right\}$$

$$\rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{3}, k\pi + \frac{2\pi}{3}\right\}$$

(4) د احنه توابع زیر را بباید.

$$\text{الف) } y = \frac{\cot x + 1}{\tan x + 1} \rightarrow x \neq \left\{\frac{k\pi}{3}\right\}, \tan x \neq -1 \rightarrow x \neq \left\{k\pi + \frac{2\pi}{3}\right\}$$

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

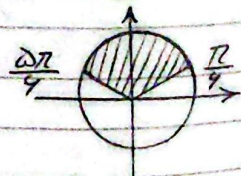


$$\rightarrow D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\right]$$

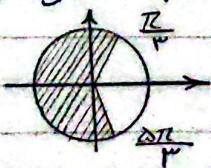
(7) د احنه توابع زیر را بباید.

$$\text{الف) } y = \sqrt{4\sin x - 1} \rightarrow 4\sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{4}$$

$$D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right]$$



$$\text{ب) } y = \sqrt{1 - 4\cos x} \rightarrow 1 - 4\cos x \geq 0 \rightarrow 4\cos x \leq 1 \rightarrow \cos x \leq \frac{1}{4}$$

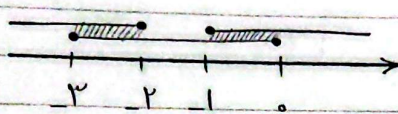


$$\rightarrow D_f = \left[2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\right]$$

٨) دالة توابع زیر را بیابید.

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

$\textcircled{1} x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow \textcircled{1} \frac{-3}{-} \cdot \frac{-1}{-}$
 $\textcircled{2} x^2 + 3x + 2 \geq 0 \rightarrow (x+2)(x+1) \geq 0 \rightarrow \frac{-2}{+} \cdot \frac{-1}{-}$

$\textcircled{1} \cap \textcircled{2} \rightarrow$

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

ب) $\cos y = \sqrt{2-2x} \rightarrow \textcircled{1} 2-2x \geq 0 \rightarrow 2x \leq 2 \rightarrow x \leq 1$

$\textcircled{2} \sqrt{2-2x} \leq 1 \rightarrow 2-2x \leq 1 \rightarrow 2x \geq 1 \rightarrow x \geq \frac{1}{2}$
 $D_f = [\frac{1}{2}, 1]$

٩) دالة توابع زیر را بیابید.

الف) $y = \log_r(1 - \log_r x) \rightarrow x > 0, 1 - \log_r x > 0 \rightarrow \log_r x < 1 \rightarrow x < r \rightarrow$

$D_f = (0, r)$

ب) $y = \log_r(1 - \log_{\frac{1}{r}} x) \rightarrow x > 0, 1 - \log_{\frac{1}{r}} x > 0 \rightarrow \log_{\frac{1}{r}} x < 1 \rightarrow x < \frac{1}{r}$

$D_f = (0, \frac{1}{r})$

١٠) دالة توابع زیر را بیابید.

الف) $y = \sqrt{r^{-x^2+4x} - 1} \rightarrow r^{-x^2+4x} - 1 \geq 0 \rightarrow r^{-x^2+4x} \geq 1$

$-x^2 + 4x \geq 0 \rightarrow x^2 - 4x \leq 0 \rightarrow (x-0)(x-4) \leq 0 \rightarrow \frac{0}{+} \cdot \frac{4}{-}$
 $D_f = [0, 4]$

ب) $y = \left(\frac{r^x + d}{r^x + f} \right) ! \rightarrow \frac{r^x + d}{r^x + f} \in \mathbb{W} \rightarrow x \in \frac{r^{\mathbb{W}} + d}{r^{\mathbb{W}} + f}$

$x \in \frac{d - r^{\mathbb{W}}}{r^{\mathbb{W}} - f} \rightarrow D_f = \left\{ x \mid x = \frac{d - r^k}{r^k - f}, k \in \mathbb{W} \right\}$