

برای حل جملی « به نام خدا » یازدهم دختره ۵/۶/۶

۱) داخله توابع زیر را بدست آورید.

الف) $y = \frac{x+3}{2x^3+3x^2-8x+3}$ $2x^3+3x^2-8x+3 \neq 0 \rightarrow (x-1)(x+3)(2x-1) \neq 0 \rightarrow$
 $D_f = \mathbb{R} - \{-3, \frac{1}{2}, 1\}$ Ⓟ

ب) $y = \frac{x+3}{2x^3+9x^2+10x+3}$ $2x^3+9x^2+10x+3 \neq 0 \rightarrow (x+1)(2x+1)(x+3) \neq 0 \rightarrow$
 $D_f = \mathbb{R} - \{-3, -\frac{1}{2}, -1\}$

۲) داخله توابع زیر را بدست آورید.

الف) $y = \frac{x+3}{x^3-2x^2+2x-1}$ $x^3-2x^2+2x-1 \neq 0 \rightarrow (x-1)(x^2-x+1) \neq 0$
 $D_f = \mathbb{R} - \{1\}$
 $\Delta = 1-4 < 0$ Ⓟ

ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}}$ $\frac{x+3}{x^3-2x^2+2x-1} \geq 0 \rightarrow$
 $D_f = (-\infty, -3] \cup (1, +\infty)$ Ⓟ

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

$x^2-\delta|x-1|-2\alpha+\delta \neq 0 \rightarrow$ ① if $x \geq 1 \rightarrow x^2-\delta(x-1)-2\alpha+\delta \neq 0$
 $\rightarrow$ ② if $x \leq 1 \rightarrow x^2-\delta(1-x)-2\alpha+\delta \neq 0$ Ⓟ
 ① $x^2-\delta x + 1 - 2\alpha + \delta \neq 0 \rightarrow (x-\delta)(x-1) \neq 0 \rightarrow x \neq \delta, 1$
 ② $x^2+\delta x - 2\alpha + \delta \neq 0 \rightarrow x(\alpha+3) \neq 0 \rightarrow x \neq -3, 0$ Ⓟ
 $D_f = \mathbb{R} - \{-3, 0, \delta, 1\}$

۴) داخله توابع زیر را بدست آورید.

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

ب) $y = \frac{5x^2+6}{[x]^2-2[x]-3}$ $[x]^2-2[x]-3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0 \rightarrow$
 $[x] \neq -1 \rightarrow x \neq [-1, 0) / [x] \neq 3 \rightarrow x \neq [3, 4)$ Ⓟ

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

(د) د احنه توابع زیر را بباید.

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

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

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

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

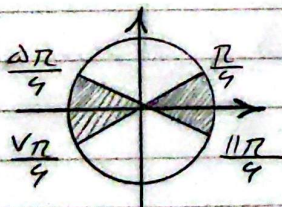
$$\rightarrow x - \frac{1}{3} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{3} \rightarrow D_f = \left\{ x \mid x = \frac{3k+1}{3}, k \in \mathbb{Z} \right\}$$

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

(4) د احنه توابع زیر را بباید.

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

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

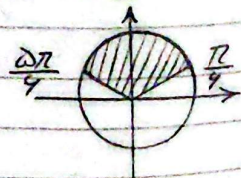


$$\rightarrow D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$

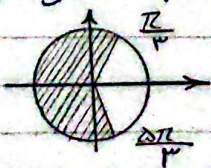
(5) د احنه توابع زیر را بباید.

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

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



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



$$\rightarrow D_f = \left[2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right]$$

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

$\rightarrow 1 - \log_{\frac{1}{r}} x > 0 \rightarrow \log_{\frac{1}{r}} x < 1 \xrightarrow{\text{من مقلوب}} x > \frac{1}{r}$

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

No

Date

1) دالة توابع زیر را بیابید.

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

① $x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow \begin{matrix} -3 & 0 \\ + & - & + \\ \hline & \varepsilon & \varepsilon \end{matrix}$ ② $x^2 + 3x + 2 \geq 0 \rightarrow (x+2)(x+1) \geq 0 \rightarrow \begin{matrix} -2 & -1 \\ + & - & + \\ \hline & \varepsilon & \varepsilon \end{matrix}$

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

ب) $\cos y = \sqrt{5 - 2x} \rightarrow$ ① $5 - 2x \geq 0 \rightarrow 2x \leq 5 \rightarrow x \leq \frac{5}{2}$
② $\sqrt{5 - 2x} \leq 1 \rightarrow 5 - 2x \leq 1 \rightarrow 2x \geq 4 \rightarrow x \geq 2$ $D_f = [2, \frac{5}{2}]$

9) دالة توابع زیر را بیابید.

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

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

$\log_{\frac{1}{r}} x < 1 \rightarrow x > \frac{1}{r} \rightarrow D_f = (\frac{1}{r}, +\infty)$

10) دالة توابع زیر را بیابید.

الف) $y = \sqrt{r^{-x^2+4x} - 1} \rightarrow r^{-x^2+4x} - 1 \geq 0 \rightarrow r^{-x^2+4x} \geq 1 \rightarrow$
 $-x^2 + 4x \geq 0 \rightarrow x^2 - 4x \leq 0 \rightarrow (x-0)(x-4) \leq 0 \rightarrow \begin{matrix} 0 & 4 \\ + & - & + \\ \hline & \varepsilon & \varepsilon \end{matrix}$
 $D_f = [0, 4]$

ب) $y = (\frac{rx+d}{rx+f})!$ $\rightarrow \frac{rx+d}{rx+f} \in \mathbb{N} \rightarrow x \in \frac{f\mathbb{N}-d}{r\mathbb{N}-r}$

$x \in \frac{d-f\mathbb{N}}{r\mathbb{N}-r} \rightarrow D_f = \{x \mid x = \frac{d-fk}{rk-r}, k \in \mathbb{N}\}$