

نام و نام خانوادگی: امیر علی بهرامی / میث تکیف، تابعه و خواص آری / شماره تکلیف: ۳

Subject:

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پاسخ سوال اول:

$$y = \frac{x+3}{(x-1)(2x^2+4x-3)} \rightarrow D_f = \{x \mid x \in \mathbb{R}, x \neq 1, \frac{1}{2}, -3\}$$

الف)

$\begin{matrix} \swarrow & \swarrow & \searrow \\ 1 & \frac{1}{2} & -3 \end{matrix}$

$$y = \frac{x+3}{(x+1)(2x^2+7x+3)} \rightarrow D_f = \{x \mid x \in \mathbb{R}, x \neq -1, -\frac{1}{2}, -3\}$$

$\begin{matrix} \swarrow & \swarrow & \searrow \\ -1 & -\frac{1}{2} & -3 \end{matrix}$

پاسخ سوال دوم:

$$y = \frac{x+3}{(x-1)(x^2-x+1)} \rightarrow D_f = \{x \mid x \in \mathbb{R}, x \neq 1\}$$

الف)

$\begin{matrix} \swarrow & \searrow \\ 1 & \Delta < 0 \end{matrix}$

$$y = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}}$$

$\begin{matrix} \swarrow & \searrow \\ 1 & \Delta < 0 \end{matrix}$

x	-3	1
$+$	0	$+$

ب)

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

پاسخ سوال سوم:

$$x^2 - 2|x-1| - 2x + 4 \neq 0$$

$\rightarrow x \geq 1 \rightarrow x^2 - 4x + 10 = 0 \rightarrow x = 2, 4$ ✓ ق ✓
 $\rightarrow x < 1 \rightarrow x^2 + 3x = 0 \rightarrow x = 0, -3$ ✓ ق ✓

$$\rightarrow D_f = \{x \mid x \in \mathbb{R}, x \neq 2, 4, -3, 0\}$$

پاسخ سوال چهارم:

$$y = \sqrt{[-x] - 2} \rightarrow [-x] - 2 \geq 0 \rightarrow -x \geq 2$$

الف)

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

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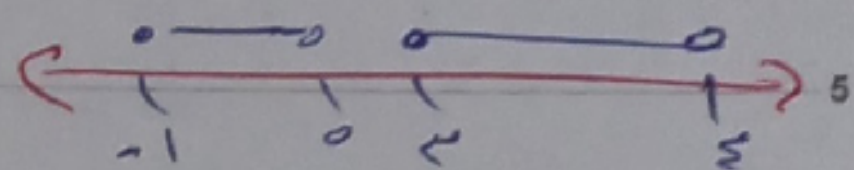
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$$[x]^2 - 2[x] - 3 \neq 0 \rightarrow [x] = +$$

$$\rightarrow x^2 - 2x - 3 = 0 \rightarrow x \neq -1, 3$$

$$\rightarrow [x] = -1 \rightarrow -1 \leq x < 0 \text{ , } [x] = 3 \rightarrow 3 \leq x < 4$$

$$D_f = (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$$



پاسخ سوال پنجم

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

$$[x + \frac{1}{x}] \geq \frac{1}{2} \rightarrow [x + \frac{1}{x}] \geq 1 \rightarrow x + \frac{1}{x} \geq 1$$

$$x \geq \frac{1}{x} \rightarrow D_f = [\frac{1}{x}, +\infty)$$

الف

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$$[x - \frac{1}{x}] + [- (x - \frac{1}{x})] \geq 0 \rightarrow \begin{cases} x \in \mathbb{Z} + \frac{1}{x} & y = 0 \checkmark \\ x \notin \mathbb{Z} + \frac{1}{x} & y = -1 \end{cases}$$

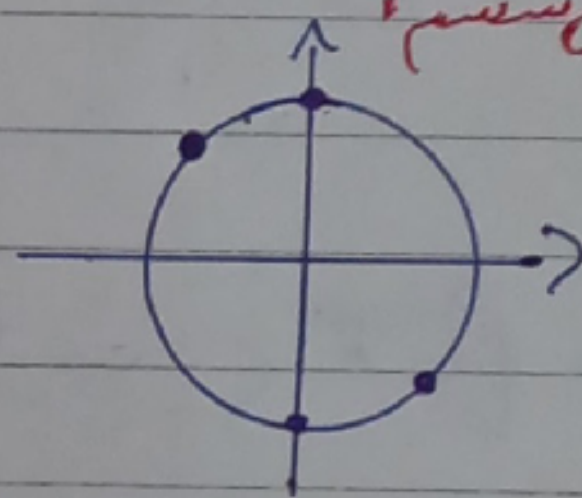
$$D_f = \{x \mid k \in \mathbb{Z} + \frac{1}{x}, x \neq k\}$$

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پاسخ سوال ششم

$$\tan x + 1 \neq 0 \rightarrow \tan x \neq -1$$

$$D_f = \mathbb{R} - \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$$

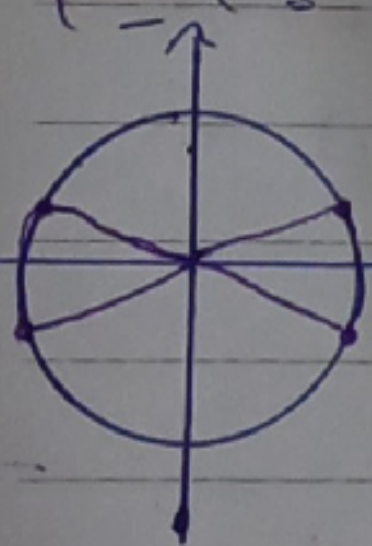


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$$1 - \sqrt{2} \sin x \geq 0 \rightarrow \sin x \leq \frac{1}{\sqrt{2}} \rightarrow -\frac{1}{\sqrt{2}} \leq \sin x \leq \frac{1}{\sqrt{2}}$$

ب



$$D_f = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right] \cup \left[k\pi + \frac{5\pi}{4}, k\pi + \frac{7\pi}{4} \right]$$

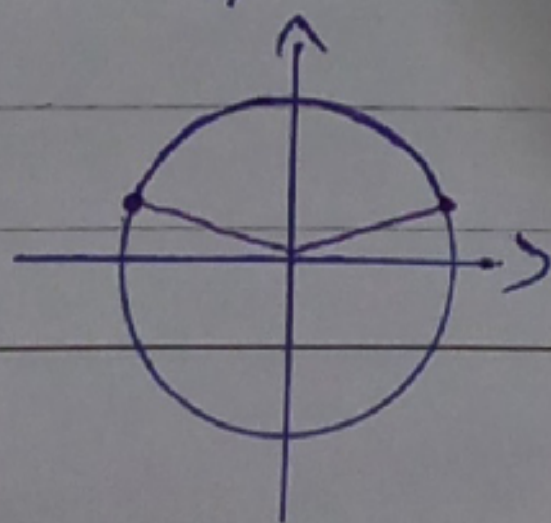
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$$2 \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2}$$

پاسخ سوال هفتم

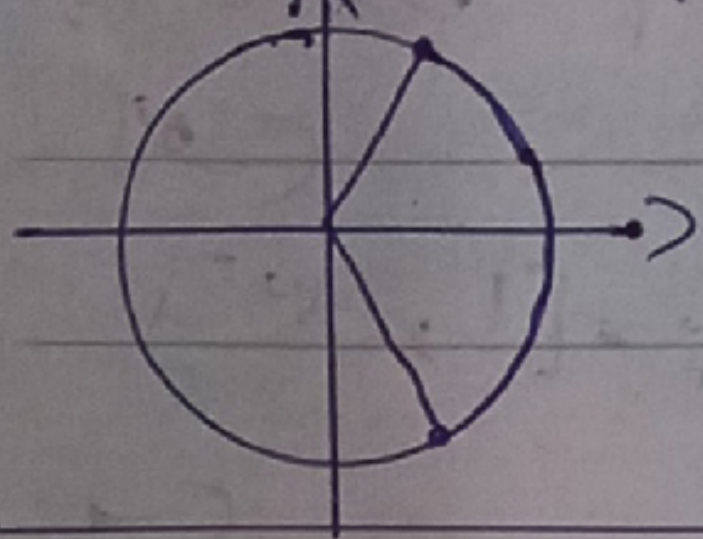
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$$D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right]$$

$$1 - 2\cos x \geq 0 \rightarrow \cos x \leq \frac{1}{2}$$



$$D_f = \left[\pi - \frac{\pi}{3}, \pi + \frac{\pi}{3} \right]$$

بـ

باسم سوال مشتق

$$-1 \leq x^2 + 3x + 1 \leq 1 \xrightarrow{+1} \sqrt{1} \leq (x+3)^2 \leq 9$$

الفـ

$$\rightarrow \sqrt{1} \leq x+3 \leq 3 \rightarrow \sqrt{1}-3 \leq x \leq 0$$

$$\rightarrow -\sqrt{1} \leq x+3 \leq -3 \rightarrow -4 \leq x \leq -\sqrt{1}-3$$

بـ

$$-1 \leq \sqrt{2-2x} \leq 1 \rightarrow 0 \leq \sqrt{2-2x} \leq 1$$

$$0 \leq 2-2x \leq 1 \rightarrow -2 \leq -2x \leq -3$$

$$2 \leq x \leq \frac{3}{2} \rightarrow D_f = \left[2, \frac{3}{2} \right]$$

باسم سوال نسج

$$y = \log_r (1 - \log_m^x)$$

الفـ

$$1 - \log_m^x > 0 \rightarrow \log_m^x < 1 \rightarrow 0 < x < 3$$

$$D_f = (0, 3)$$

بـ

$$1 - \log_{\frac{1}{r}}^x > 0 \rightarrow \log_{\frac{1}{r}}^x < 1 \rightarrow 0 < x < \frac{1}{r}$$

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

باسم سوال (قسم):

$$\mu \varepsilon_{\mu} - x^2 \rightarrow 1 \rightarrow \mu \varepsilon_{\mu} - x^2 \rightarrow \mu \varepsilon_{\mu} - x^2$$

$$\varepsilon_{\mu} - x^2 \geq \mu \rightarrow x^2 - \varepsilon_{\mu} + \mu \leq 0 \quad D_f = [1, \mu]$$

$$\mu_{\mu} \rightarrow \infty \rightarrow \mu_{\mu} \rightarrow \infty \rightarrow \mu_{\mu} \rightarrow \infty$$

$$\mu_{\mu} \rightarrow \infty$$

$$\mu_{\mu} - \mu_{\mu} \in \mathbb{Z} \rightarrow \mu_{\mu} \rightarrow \infty \rightarrow \mu_{\mu} \rightarrow \infty$$

$$D_f = \left\{ x = \frac{\mu_{\mu} - \mu_{\mu}}{\mu_{\mu} - \mu_{\mu}}, \mu_{\mu} \in \mathbb{Z} \right\}$$