

Subject:

Year:

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B: یازدهم دختر

14,5

Name:

حوا کبریایی زاده



$$f(x) = \sqrt{(a-x)x^2 + ax + b} \quad Df = [3, +\infty)$$

سوال (1)

$$\Delta = 0 \rightarrow a^2 - f(a-x)(b) = a^2 - fab + ab = 0$$

$$\xrightarrow{n=3} (a-x)^2 + 3a + b = 12a + b = 11 \rightarrow (12 \times \frac{11}{9}) + b = 11$$

$$b = -\frac{11 \times 9}{9} + 12 \times \frac{11}{9} = \boxed{-\frac{11}{9}}$$

$$-a \pm \sqrt{\dots} \quad \text{باید یک ضرایب مثبت باشد!}$$

$$\frac{-a \pm \sqrt{\dots}}{2(a-x)} = \frac{-a}{2a-x} = 3 \rightarrow a = \frac{11}{9}$$

سوال (2)

$$f(x) = \sqrt{x^2 + 2x + 2 - m^2} \geq 0 \quad Df = \mathbb{R}$$

$$\Delta \leq 0 \rightarrow b^2 - f(a)(c) \rightarrow 4 - f(2-m^2)(1) = 4 - 1 + fm^2$$

$$fm^2 - 3 \leq 0 \rightarrow fm^2 \leq 3 \quad -2 \leq 2m \leq 2 \rightarrow -1 \leq m \leq 1$$

$$1 - (-1) = 2$$

سوال (3)

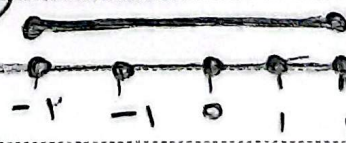
$$f(n) = \sqrt{4-n^2} \geq 0$$

$$4-n^2 \geq 0 \rightarrow 4 \geq n^2 \rightarrow$$

$$[n] + [-n] + 1 \neq 0$$

$$2 \geq n \geq -2 \quad (1)$$

$$[n] + [-n] \neq -1 \rightarrow n \in \mathbb{Z} \setminus \{0\}$$



① و ②

$$\rightarrow Df = [-2, 2]$$

(مجموعه مقادیر n)

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سوال 4:

الف) $y = \sqrt{x^3 + 3x^2}$

$$x^2(x+3) \geq 0 \rightarrow x = 0, -3$$

+∞ ← 0 ← -3

-3	0
+	+

$Df = [-3, +\infty)$

ب) $\sqrt{\frac{(x^2-1)(x^3-3x^2)}{x^3-1}} \geq 0 \rightarrow \frac{(x^2-1)(x^3-3x^2)}{x^3-1} \geq 0$

1 ← 0 ← +∞

به ازای $x=0$ عبارت برابر 0 است و در دامنه نیست!

$$\frac{(x^2-1)x^2(x-3)}{x^3-1} \geq 0 \rightarrow x = -1, 0, 3$$

-1	0	3
+	-	+

$Df = (-\infty, -1] \cup [3, +\infty) \cup \{0\}$

سوال 5:

الف) $y = \sqrt{|x-2|-3}$

$$|x-2| \geq 3 \rightarrow x-2 \geq 3 \rightarrow x \geq 5$$

$$\downarrow$$

$$-3 \geq x-2$$

$$x \leq -1$$

$Df = (-\infty, -1] \cup [5, +\infty)$

$$ب) y = \sqrt{4 - |x - 2|} \quad x \geq |x - 2|$$

$$x \geq x - 2 \geq -x \rightarrow 4 \geq x \geq -2$$

$$Df = [-2, 4]$$

سوال 6:

$$الف) y = \sqrt{1 - x|x|}$$

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$$1 - x|x| \geq 0 \xrightarrow{x \geq 0} 1 - x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow -1 \leq x \leq 1 \quad (I)$$

$$\xrightarrow{x < 0} 1 + x^2 \geq 0 \rightarrow \text{دقیقاً} \quad (II)$$

$$(I) \cap (II) \rightarrow Df = [-1, 1]$$

بنازی $x \leq 1$ و $x \geq -1$ و تقاب می‌گردد پس!
 $Df = (-\infty, \infty)$

$$ب) y = \frac{1}{\sqrt{3 - |x - 5| - 1}}$$

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$$3 - |x - 5| - 1 > 0 \rightarrow |x - 5| < 2 \rightarrow -2 < x - 5 < 2$$

$$\rightarrow 3 < x < 7 \rightarrow Df = (3, 7)$$

صورت سوال را اشتباه ننویس!

$$\sqrt{3 - |x - 5|} - 1 \neq 0 \rightarrow \sqrt{3 - |x - 5|} \neq 1$$

$$\text{الف) } y = \frac{\sin^p x - 1}{\cos x}$$

(V) Low

$$\cos x \neq 0 \rightarrow x \neq K\pi + \frac{\pi}{2}$$

$$Df = \mathbb{R} - \left\{ K\pi + \frac{\pi}{2} \right\}$$

$$\text{ب) } y = \frac{\cos x}{2\cos x - 1}$$

$$2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow \cos x \neq \frac{1}{2} \rightarrow x \neq 2K\pi \pm \frac{\pi}{3}$$

$$\text{⊗ } D = \mathbb{R} - \left\{ 2K\pi \pm \frac{\pi}{3} \right\}$$

(A) Low

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

$$|2x+1| - |x+3| \neq 0 \rightarrow 4x^2 + 4x + 1 - x^2 - 6x - 9 \neq 0 \rightarrow 3x^2 - 2x - 8 \neq 0$$

$$\rightarrow 3x^2 - 2x - 8 = 0 \rightarrow (x-4)(x+\frac{2}{3}) = 0 \rightarrow x = 4, -\frac{2}{3}$$

$$Df = \mathbb{R} - \left\{ 4, -\frac{2}{3} \right\}$$

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

$$(2x+1)^2 - (x+3)^2 \geq 0 \rightarrow 3x^2 - 2x - 8 \geq 0 \rightarrow 3x^2 - 2x - 8 \geq 0$$

$$\rightarrow (x-4)(x+\frac{2}{3}) \geq 0 \rightarrow x = 4, -\frac{2}{3}$$

$$Df = (-\infty, -\frac{2}{3}] \cup [4, +\infty)$$

$$\text{الف) } y = \frac{\sin^2 x - 1}{\cos x}$$

(سوال ۷)

$$\cos x \neq 0 \rightarrow x \neq K\pi + \frac{\pi}{2}$$

$$D_f = \mathbb{R} - \left\{ K\pi + \frac{\pi}{2} \right\}$$

و جبهه افق

$$\text{ب) } y = \frac{\cos x}{2\cos x - 1}$$

$$2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow \cos x \neq \frac{1}{2} \rightarrow x \neq 2K\pi \pm \frac{\pi}{3}$$

$$\text{⊗ } D = \mathbb{R} - \left\{ 2K\pi \pm \frac{\pi}{3} \right\}$$

(سوال ۸)

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

$$|2x+1| - |x+3| \neq 0 \rightarrow (2x+1)^2 - (x+3)^2 \neq 0 \rightarrow 4x^2 + 4x + 1 - x^2 - 6x - 9 \neq 0 \rightarrow 3x^2 - 2x - 8 \neq 0$$

$$\rightarrow 3x^2 - 2x - 8 = 0 \rightarrow (x-4)(x+\frac{2}{3}) = 0 \rightarrow x = 4, -\frac{2}{3}$$

$$D_f = \mathbb{R} - \left\{ 4, -\frac{2}{3} \right\}$$

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

$$(2x+1)^2 - (x+3)^2 \geq 0 \rightarrow 3x^2 - 2x - 8 \geq 0 \rightarrow 3x^2 - 2x - 8 \geq 0$$

$$\rightarrow (x-4)(x+\frac{2}{3}) \geq 0 \rightarrow x = 4, -\frac{2}{3}$$

$$D_f = (-\infty, -\frac{2}{3}] \cup [4, +\infty)$$

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سوال 9

$$\log^{(r^n-1)} > 0 \rightarrow r^n - 1 > 1 \rightarrow r^n > 2 \rightarrow n > 1 \text{ (II)}$$

$$I \cap H \cap III \rightarrow Df_5(154)$$

How

$$\rho \cos \alpha > -1 \rightarrow \cos \alpha > \frac{-1}{\rho} \rightarrow D_f = \left(\varphi_{K\pi} - \frac{\pi}{\rho}, \varphi_{K\pi} + \frac{\pi}{\rho} \right)$$

$$\frac{n-1-(n+1)}{n+1} \geq 0 \rightarrow \frac{-2}{n+1} \geq 0 \rightarrow n+1 \leq 0 \rightarrow n \leq -1 \quad (1)$$

$$\rightarrow \frac{x+1}{x+1} > 0 \rightarrow + \frac{-1}{-1} \textcircled{Y} \xrightarrow{\textcircled{1} \textcircled{Y}} D_f = (-\infty, -1)$$

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جسار قسٹنٹ ن آفین ہاؤس



خستہ نیا شپ

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(۱) چون دامنه تک بازه است پس عبارت نمی تواند یک سهم باشد و باید یک خط باشد!

$$a - 2 = 0 \rightarrow a = 2 \rightarrow f(x) = \sqrt{2x + b} \quad Df = [3, +\infty) \rightarrow f(3) + b = 0 \rightarrow \boxed{b = -6}$$

۴-ب) $\frac{(x^2-1)(x^3-x^2)}{(x^3-1)} \geq 0 \rightarrow \frac{(x-1)(x+1)(x^2)(x-1)}{(x-1)(x^2+x+1)} \geq 0$

$\frac{-1}{+} \quad \frac{0}{-} \quad \frac{0}{-} \quad \frac{3}{-} \quad \frac{+}{+}$

$Df = (-\infty, -1] \cup \{0\} \cup [3, +\infty)$

$\Delta < 0$ همیشه ندارد

۴-الف) $1 - x|x| \geq 0$

$x \geq 0 \rightarrow 1 - x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow -1 \leq x \leq 1 \xrightarrow{x \geq 0} 0 \leq x \leq 1$

$x \leq 0 \rightarrow 1 + x^2 \geq 0$

$\begin{array}{c} \uparrow \\ \downarrow \end{array}$

همواره مثبت است

البته مرتدانیسم مثل تابع را رسم کنیم

$Df = (-\infty, 1] \leftarrow$

۴-ب) $3 - |x-5| \geq 0 \rightarrow |x-5| \leq 3 \rightarrow -3 \leq x-5 \leq 3 \rightarrow 2 \leq x \leq 8$

$\sqrt{3 - |x-5|} - 1 \neq 0 \rightarrow \sqrt{3 - |x-5|} \neq 1 \rightarrow 3 - |x-5| \neq 2 \rightarrow |x-5| \neq 2 \rightarrow x \neq 7, 3$

$Df = [2, 8] - \{3, 7\} = [2, 3) \cup (3, 7) \cup (7, 8]$