

گروه: یازدهم B

۱۷/۲۵

نام و نام خانوادگی: آتنا ترک تریابی شماره تکلیف: ۴

$f(x) = \sqrt{(a-2)x^2 + ax + b}$ $D_f = [3, +\infty)$ $x=3 \rightarrow 9(a-2) + 3a + b = 0 \Rightarrow$
 بایدید خطا با سبب مثبت باشد!

$9a - 18 + 3a + b = 0 \rightarrow 12a + b - 18 = 0 \rightarrow b = -12a + 18$ $\Delta = 0 \rightarrow a^2 - 4b(a-2) = 0$
 $\Rightarrow a^2 - 4(-12a + 18)(a-2) = 0 \Rightarrow (4a - 12)^2 = 0 \rightarrow a = \frac{12}{4} = 3$ $b = -12 \times \frac{12}{4} + 18 = -27 + 18 = -9$
 $b = \frac{129 - 144}{4} \Rightarrow b = -\frac{15}{4}$

$f(x) = \sqrt{x^2 + 2x + 2 - m^2}$ $x^2 + 2x + 2 - m^2 \geq 0$ $\Delta \leq 0 \rightarrow 4 - 4(2 - m^2) \leq 0 \rightarrow$
 $4 - 8 + 4m^2 \leq 0 \rightarrow 4m^2 - 4 \leq 0 \rightarrow m^2 - 1 \leq 0 \rightarrow m^2 \leq 1 \rightarrow -1 \leq m \leq 1$

$f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1}$ $I: 4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$
 $II: [x] + [-x] + 1 \neq 0$ $I \cap II: [-2, 2]$

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

$y = \sqrt{|x-2|-3} \rightarrow |x-2|-3 \geq 0 \rightarrow |x-2| \geq 3 \Rightarrow \begin{cases} x-2 \geq 3 \rightarrow x \geq 5 \\ x-2 \leq -3 \rightarrow x \leq -1 \end{cases}$ $D_f = (-\infty, -1] \cup [5, +\infty)$
 $y = \sqrt{4-|2-x|} \rightarrow 4-|2-x| \geq 0 \rightarrow |2-x| \leq 4 \Rightarrow \begin{cases} 2-x \leq 4 \rightarrow x \geq -2 \\ 2-x \geq -4 \rightarrow x \leq 6 \end{cases}$ $D_f = [-2, 6]$

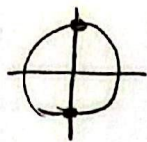
$y = \sqrt{1-x|x|} \rightarrow 1-x|x| \geq 0 \rightarrow x \geq 0 \rightarrow 1-x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow 0 \leq x \leq 1$
 $x < 0 \rightarrow 1-x(-x) \geq 0 \rightarrow 1+x^2 \geq 0$ $D_f = (-\infty, -1]$

$y = \frac{1}{\sqrt{3-|x-5|-1}}$ $3-|x-5|-1 > 0 \rightarrow 2-|x-5| > 0 \rightarrow |x-5| < 2 \Rightarrow \begin{cases} x-5 < 2 \rightarrow x < 7 \\ x-5 > -2 \rightarrow x > 3 \end{cases}$ $D_f = (3, 7)$

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

صورت سوال را استباه نوشتی!

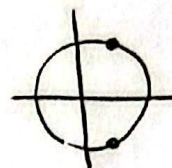
الف) $y = \frac{\sin^2 x - 1}{\cos x} \rightarrow \cos x \neq 0$



$D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

✓

ب) $y = \frac{\cos x}{r \cos x - 1} \rightarrow r \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{r}$



$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$

الف) $y = \frac{x+r}{|rx+1| - |x+r|} \rightarrow |rx+1| - |x+r| \neq 0 \rightarrow |rx+1| \neq |x+r| \rightarrow$

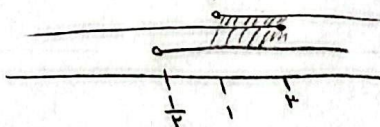
$(rx+1)^2 \neq (x+r)^2 \rightarrow rx^2 + rx + 1 \neq x^2 + rx + r \rightarrow rx^2 - x - r \neq 0 \rightarrow x^2 - rx - r \neq 0$

$(x-r)(x+r) \neq 0 \rightarrow x \neq r, x \neq -r$ $D_f = \mathbb{R} - \{-\frac{r}{r}, r\}$

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ب) $y = \sqrt{|rx+1| - |x+r|} \rightarrow |rx+1| - |x+r| \geq 0 \rightarrow |rx+1| \geq |x+r| \rightarrow (rx+1)^2 \geq (x+r)^2$
 $\rightarrow rx^2 + rx + 1 \geq x^2 + rx + r \rightarrow rx^2 - x - r \geq 0 \rightarrow \frac{-\frac{r}{r}}{r - r} \leq x \leq \frac{-\frac{r}{r}}{r - r}$ $D_f = (-\infty, -\frac{r}{r}] \cup [\frac{r}{r}, +\infty)$

$f(x) = \sqrt{\log_a \log_a (rx-1)}$ I: $rx-1 > 0 \rightarrow rx > 1 \rightarrow x > \frac{1}{r}$ II: $\log_a \log_a (rx-1) \geq 0 \rightarrow \log_a (rx-1) \geq 1 \rightarrow rx-1 \geq a \rightarrow rx \geq a+1 \rightarrow x \geq \frac{a+1}{r}$
 III: $\log_a \log_a (rx-1) < 0 \rightarrow rx-1 > 1 \rightarrow rx > 2 \rightarrow x > \frac{2}{r}$

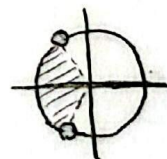


$D_f = (1, r]$

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الف) $y = \log(r \cos x + 1)$ $r \cos x + 1 > 0 \rightarrow r \cos x > -1 \rightarrow \cos x > -\frac{1}{r}$

$D_f = (k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r})$



ب) $y = \sqrt{\log \frac{x-1}{x+1}}$ I: $\frac{x-1}{x+1} > 0 \rightarrow \frac{-1}{r - r} < x < \frac{1}{r - r}$ $(-\infty, -1) \cup [1, +\infty)$

II: $\log \frac{x-1}{x+1} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1+x-1}{x+1} \geq 0 \rightarrow \frac{-r}{x+1} \geq 0 \rightarrow x < -1$

$\frac{-1}{r - r} < x < -1$ I ∩ II $\rightarrow (-\infty, -1)$

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

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

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

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

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