

نام و نام خانوادگی شماره کلاس پاسخنامه تشریحی تکلیف شماره ۴ *پ. افشین عالی نوری*

معادله خط $f(x) = \sqrt{(a-2)x^2 + ax + b} \rightarrow$

$a-2 \geq 0$
 $a \geq 2$
 $ax + b \rightarrow x \geq 0 \rightarrow 3a + b \geq 0 \rightarrow 3a \geq -b$
 $3(2) \geq -b$
 $b \geq -6$

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$f(x) = \sqrt{x^2 + 2x + 2 - m^2}$ $D_f = \mathbb{R}$

$\Delta \leq 0 \rightarrow f - f(1)(2 - m^2) \leq 0$
 $f - 1 + fm^2 \leq 0 \rightarrow fm^2 - f \leq 0$
 $f(m^2 - 1) \leq 0 \rightarrow [1, 1]$
 $\pm 1 \rightarrow \frac{-1 \pm 1}{+b - 4 +}$
 $m_{max} - m_{min} = 1 - (-1) = 2$

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$f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1}$

$f - x^2 \geq 0 \rightarrow f \geq x^2 \rightarrow [-2, 2]$
 $[x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1 \rightarrow \mathbb{Z}$
 $\cap \rightarrow D_f = [-2, 2] \rightarrow x \in \mathbb{Z} \rightarrow x = 0$

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الف) $y = \sqrt{x^3 + 3x^2}$

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

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

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

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الف) $y = \sqrt{|x-2|-3}$

$|x-2|-3 \geq 0 \rightarrow |x-2| \geq 3$
 $x-2 \geq 3 \rightarrow x \geq 5$
 $-x+2 \geq 3 \rightarrow x \leq -1$
 $D_f = (-\infty, -1] \cup [5, +\infty)$

ب) $y = \sqrt{4-|2-x|}$

$4-|2-x| \geq 0 \rightarrow 4 \geq |2-x| \rightarrow -4 \leq 2-x \leq 4$
 $-4 \leq -x \leq 2$
 $4 \geq x \geq -2$
 $D_f = [-2, 4]$

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الف) $y = \sqrt{1-x|x|}$

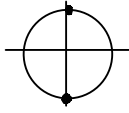
$1 - x|x| \geq 0 \rightarrow 1 \geq x|x| \rightarrow D_f: (-\infty, 1]$

ب) $y = \frac{1}{\sqrt{3-|x-5|}-1}$

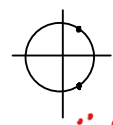
$3 - |x-5| \geq 0 \rightarrow 3 \geq |x-5| \rightarrow \begin{matrix} x \geq 5-3 \\ x \leq 5+3 \end{matrix} \rightarrow 2 \leq x \leq 8$
 $\sqrt{3-|x-5|} - 1 \neq 0 \rightarrow \sqrt{3-|x-5|} \neq 1 \rightarrow \begin{matrix} 3-|x-5| \neq 1 \\ 3 \neq |x-5| \\ 3 = x-5 \rightarrow x \neq 8 \\ 3 = 5-x \rightarrow x \neq 2 \end{matrix}$
 $D_f = [2, 8] - \{2, 8\}$

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

$\cos x \neq 0$  $D_f: \{k\pi + \frac{\pi}{2}, k \in \mathbb{Z}\}$

ب) $y = \frac{\cos x}{2\cos x - 1}$

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

 $D_f = \mathbb{R} - \{\frac{\pi}{3}, \frac{5\pi}{3}\}$
 IR هم بنویسید لطفاً

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الف) $y = \frac{x+3}{|2x+1|-|x+3|}$

$|2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \rightarrow 2x+1 = -(x+3) \rightarrow 3x = -4 \rightarrow x = -\frac{4}{3}$
 $|2x+1| \neq |x+3| \rightarrow 2x+1 = x+3 \rightarrow x = 2$
 $D_f = \mathbb{R} - \{-\frac{4}{3}, 2\}$

ب) $y = \sqrt{|2x+1|-|x+3|}$

$|2x+1|^2 \geq (x+3)^2$
 $4x^2 + 4x + 1 \geq x^2 + 6x + 9$
 $3x^2 - 2x - 8 \geq 0 \rightarrow (3x+4)(x-2) \geq 0$
 $D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$

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$f(x) = \sqrt{\log_{\frac{1}{5}} \log_{\frac{1}{5}} (2x-1)}$

$\log_{\frac{1}{5}} \log_{\frac{1}{5}} (2x-1) \geq 0$

$\log_{\frac{1}{5}} \log_{\frac{1}{5}} (2x-1) \geq 0$

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

$\log_{\frac{1}{5}} (2x-1) \geq 1$

$\log_{\frac{1}{5}} (2x-1) \geq 1 \rightarrow 2x-1 \geq \frac{1}{5} \rightarrow 2x \geq \frac{6}{5} \rightarrow x \geq \frac{3}{5}$

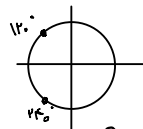
$2x-1 \geq 5 \rightarrow 2x \geq 6 \rightarrow x \geq 3$

$D_f = [3, +\infty)$

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الف) $y = \log(2\cos x + 1)$

$2\cos x + 1 > 0 \rightarrow 2\cos x > -1 \rightarrow \cos x > -\frac{1}{2}$



ب) $y = \sqrt{\log \frac{x-1}{x+1}}$

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

$\log \frac{x-1}{x+1} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1-x-1}{x+1} \geq 0 \rightarrow \frac{-2}{x+1} \geq 0 \rightarrow x < -1$

$D_f = \mathbb{R} - \{\frac{\pi}{3}, \frac{5\pi}{3}\}$

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