Subject: .... / .... Year: .... Month: .... Date: ....

«تکلیف ۳» «یازدهم دخترانه» «ریاضی ۱» «زهرا الاردانی»

۱-

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

$2x^3+3x^2-8x+3 = (x-1)(2x^2+5x-3)$

$2x^2+5x-3 \rightarrow (x+\frac{6}{2})(x-\frac{1}{2})$

ب) $y = \dfrac{x+3}{2x^3+9x^2+10x+3} = \dfrac{x+3}{(x+1)(2x^2+7x+3)} = \dfrac{x+3}{(x+3)(x+\frac{1}{2})(x+1)}$

$D_f = \mathbb{R} - \{-3, -1, -\frac{1}{2}\}$

۲-

الف) $y = \dfrac{x+3}{x^3-2x^2+2x-1} = \dfrac{x+3}{(x-1)(x^2-x+1)}$, $x=1$, $\Delta<0$ $\quad D_{f_1} = \mathbb{R} - \{1\}$

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

۳-

$y = \dfrac{2}{x^2-5|x-1|-2x+5}$, $x=1$

$x^2+5x-5-2x+5 = x^2+3x$ | $x^2-5x+5-2x+5 = x^2-7x+10$

$x^2+3x=0 \rightarrow x=0, -3$ $\quad (x-5)(x-2)=0 \rightarrow x=2, 5$

$D_f = \mathbb{R} - \{2, 5, 0, -3\}$

۴-

الف) $y = \dfrac{x+3}{|2x+1|-|x+3|}$, $x=-\frac{1}{2}$, $x=-3$

−3		−1/2	
$-x+2$	$-3x-4$	$x-2$
$-x+2=0$, $x=2$	$-3x-4=0$, $x=-\frac{4}{3}$	$x-2=0$, $x=2$

$D = \mathbb{R} - \{-\frac{4}{3}, 2\}$

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

$\rightarrow 4x^2+4x+1 \geq x^2+9+6x \rightarrow 3x^2-2x-8 \geq 0 \rightarrow (x-2)(x+\frac{4}{3}) \geq 0$

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

۵-

الف) $y = \log_2(1-\log_3 x)$ $\quad$ ب) $y = \log_2(1-\log_{\frac{1}{2}} x)$

$1-\log_3 x > 0 \rightarrow \log_3 x < 1 \rightarrow x<3$ $\quad 1-\log_{\frac{1}{2}} x > 0 \rightarrow \log_{\frac{1}{2}} x < 1 \rightarrow x > \frac{1}{2}$

$x>0 \rightarrow D_f = (0, 3)$ $\quad$ SABA $\quad x>0 \rightarrow D_f = (\frac{1}{2}, +\infty)$

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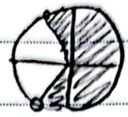
-۶ $f = \sqrt{\log_{0.5} \log_5 (2x-1)} \to 2x-1 > 0 \to x > \frac{1}{2}$ $D_f = (1, 3]$

$\to \log_5^{2x-1} > 0 \to 2x-1 > 1 \to 2x > 2 \to x > 1$

$\to \log_{0.5} \log_5^{2x-1} \geq 0 \to \log_5^{2x-1} \leq 1 \to 2x-1 \leq 5 \to x \leq 3$

-۷ الف) $y = \log(2\cos x + 1)$

$2\cos x + 1 > 0 \to 2\cos x > -1 \to \cos x > -\frac{1}{2} \to$  $\to D_y = (2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3})$

ب) $y = \sqrt{\log \frac{x-1}{x+1}} \to \frac{x-1}{x+1} > 0 \to$ (-1, $+1$: $+ \circ - \circ +$) $\to D_y = (-\infty, -1)$

$\log \frac{x-1}{x+1} \geq 0 \to \frac{x-1}{x+1} \geq 1 \to \frac{x-1-x-1}{x+1} \geq 0 \to \frac{-2}{x+1} \geq 0 \to$ (-1: $+ \circ -$)

-۸ $f(x) = \sqrt{(a+2)x^2 + ax + b}$ $D_f = (-\infty, 3] \to b = ?$

$a+2 = 0 \to a = -2$ $\quad -2x + b \geq 0 \to$ (3: $+ \circ -$) $\to \frac{b}{2} = 3 \to b = 6$

-۹ $f(x) = \sqrt{x^2 + 2x + 2 - m^2}$ $D_f = \mathbb{R}$ $\quad m_{max} - m_{min} \to 1 - (-1) = 2$

$\Delta \leq 0 \to b^2 - 4ac \leq 0 \to 4 - 4(2 - m^2) \leq 0 \to 1 - 2 + m^2 \leq 0 \to m^2 \leq 1 \to -1 \leq m \leq 1$

$a > 0$

-۱۰ $f(x) = \frac{\sqrt{4 - x^2}}{[x] + [-x] + 1} \to 4 - x^2 \geq 0 \to -2 \leq x \leq 2$

$x \in \mathbb{Z} \to$ مخرج $= 1$ $\quad D_f = \{-2, -1, 0, 1, 2\}$

$x \notin \mathbb{Z} \to$ مخرج $= 0$