۲۰

الیسا جلالی - تکلیف شماره ۳

-۱

الف) $y = \dfrac{x+3}{\underbrace{2x^3+3x^2-8x+3}_{\text{جمع ضرایب} = 0}} = \dfrac{x+3}{(x-1)(2x^2+5x-3)} = \dfrac{x+3}{(x-1)(x+3)(2x-1)}$

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

۲

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

جمع ضرایب توان‌های زوج = توان‌های فرد

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

-۲

الف) $y = \dfrac{x+2}{\underbrace{x^3-2x^2+2x-1}_{\text{جمع ضرایب} = 0}} = \dfrac{x+2}{(x-1)\underbrace{(x^2-x+1)}_{\Delta<0}}$ $\quad D = \mathbb{R} - \{1\}$

۲

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

	-3		1	
$+$	0	$-$	$\nexists$	$+$

$D = \mathbb{R} - (-3, 1]$

-۳

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

$x<1$ (بالای جدول: 1):

$x^2+5x-5-2x+5 \neq 0$

$x^2+3x \neq 0$

$x(x+3) \neq 0$

$x \neq 0, -3$

$x \geq 1$:

$x^2-5x+5-2x+5 \neq 0$

$x^2-7x+10 \neq 0$

$(x-2)(x-5) \neq 0$ $\quad x \neq 2, 5$

۲

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

-۴

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

$|2x+1| \neq |x+3| \xrightarrow{(\,)^2} 4x^2+4x+1 = x^2+6x+9$

$3x^2-2x-8 = 0$

$(x-2)(3x+4) = 0$

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

۲

۱) $y = \sqrt{|2x+1| - |x+3|}$

$|2x+1| \geq |x+3| \xrightarrow{(\ )^2} 4x^2+4x+1 \geq x^2+6x+9$

$3x^2-2x-8 \geq 0 \qquad (x-2)(3x+4) \geq 0$

$-\frac{4}{3}$		2
$+$	$-$	$+$

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

۵-

الف) $y = \log_2 (1-\log_3 x)$ $\quad x>0$

$1-\log_3 x > 0 \qquad \log_3 x < 1 \qquad x<3 \qquad D=(0,3)$

۲

ب) $y = \log_2 (1-\log_{\frac{1}{2}} x)$ $\quad x>0$

$1-\log_{\frac{1}{2}} x > 0 \qquad \log_{\frac{1}{2}} x < 1 \qquad x > \frac{1}{2}$

$D = (\frac{1}{2}, +\infty)$

۶-

$f(x) = \sqrt{\log_{0/5} \log_5 (2x-1)}$

$2x-1>0 \qquad x>\frac{1}{2}$

$\log_5 (2x-1) > 0 \qquad 2x-1>1 \qquad x>1$

$\log_{\frac{1}{2}} \log_5 (2x-1) \geq 0 \qquad \log_5 (2x-1) \leq 1 \qquad 2x-1 \leq 5$

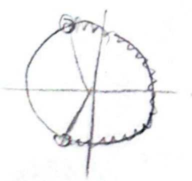
$2x \leq 6 \qquad x \leq 3$

۲

$D_f = (1, 3]$

۷-

الف) $y = \log (2\cos x + 1)$ $\qquad 2\cos x + 1 > 0 \qquad 2\cos x > -1 \qquad \cos x > -\frac{1}{2}$



$D = \mathbb{R} - [k\pi - \frac{2\pi}{3}, k\pi + \frac{2\pi}{3}]$

۱/۷۵

ب) $y = \sqrt{\log \frac{x-1}{x+1}}$

$\frac{x-1}{x+1} > 0$

-1		1
$+$	$-$	$+$

(I)

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

✓

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

$x<-1$ (II)

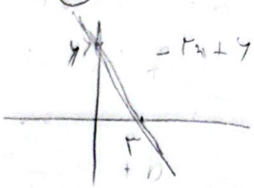
$D = (I) \cap (II) = (-\infty, -1)$

$f(x) = \sqrt{(a+2)x^2+ax+b}$ $\Big\{$ [illegible] درجه
[illegible] طول از مبدأ $= 3$

$a+2=0$
$a=-2$

	3	
+	0	−

$y = -2x+b \xrightarrow{x=3} 0 = -6+b$ $\boxed{b=6}$



د

$f(x) = \sqrt{-2x+6}$

$f(x) = \sqrt{\underbrace{x^2+2x+2-m^2}_{\Delta \le 0}}$ $4-4(2-m^2) \le 0$ -9

$4-8+4m^2 \le 0$

$4m^2 \le 4$ $m^2 \le 1$ $-1 \le m \le 1$

د

$m=1$ $m'=-1$ $|m-m'| = |1-(-1)| = 2$

$f(x) = \dfrac{\sqrt{4-x^2}}{\underbrace{[x]+[-x]}+1} = \dfrac{\sqrt{(2-x)(2+x)}}{[x]+[-x]+1}$ -10

	−2		2	
−	0	+	0	−

د

-1 و 0 عدد

$\swarrow$ $\mathbb{R}-\mathbb{Z}$ $\downarrow$ $\mathbb{Z}$

$D = [-2,2] \cap \mathbb{Z} = \{-2,-1,0,1,2\}$