رعنا آقایی — «باسمه تعالی» — یازدهم تجربی C

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۱) الف)

$2x^3+3x^2-8x+3 \;\Big|\; x-1$

$2x^2+5x-3 \to x^2-5x-6$

$(x-1)(x+6)$; $\frac{1}{2}$, -3

$\dfrac{(x+3)}{(x-1)(x-\frac{1}{2})(x+3)} = D(f)=R-\{1,\frac{1}{2},-3\}$

ب)

$\to 2x^3+9x^2+10x+3 \;\Big|\; x+1$

$2x^2+7x+3 \to x^2+7x+6$

$(x+1)(x+6)$; $-\frac{1}{2}$, -3

$\Rightarrow \dfrac{(x+3)}{(x+\frac{1}{2})(x+3)(x+1)}$; $-\frac{1}{2}$, -3 , -1

$\boxed{D(f)=R-\{-\frac{1}{2},-3,-1\}}$ → ص ب

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۲)

$y=\dfrac{x+3}{x^3-2x^2+2x-1} \to x^3-2x^2+2x-1 \;\Big|\; x-1$

x^2-x+1 ریشه ندارد ، R

$\Rightarrow \dfrac{(x+3)}{(x-1)(x^2-x+1)}$

$D_f=R-\{1\}$

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

$x^3-2x^2+2x-1 \;\Big|\; x-1$, x^2-x+1

$\Rightarrow \dfrac{(x+3)}{(x-1)(x^2-x+1)}$; -3 , 1

-3		1	
$+$	$-$		$+$

$\boxed{D(f)=(-\infty,-3]\cup(1,+\infty)}$

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۳)

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

① $x>1$: $x^2-5x+5-2x+5 \to x^2-7x+10$

② $x=1$: $\Delta=b^2-4ac=4-4(5)$

③ $x<1 \to x^2+5x-5-2x+5 \to x^2+3x=0 \to x\neq -3$, $x\neq 0$

[illegible] صحیح نیست . غلط

①∪②∪③ $\Rightarrow D(f)=R-\{-3,0,5,2\}$

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۴) الف)

$\dfrac{x+3}{|2x+1|-|x+3|}$

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

$|2x+1|-|x+3|\neq 0$, $|2x+1|=|x+3|$

$(2x+1)^2=(x+3)^2 \to 4x^2+1+4x=x^2+9+6x$

$3x^2-8x-2x=0 \to x^2-2x-24 \to (x-6)(x+4)$; $x=\frac{6}{3}=2$, $x=-\frac{4}{3}$

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

$(2x+1)^2 \geq (x+3)^2 \rightarrow 4x^2+4x+1\geq x^2+6x+9$

$3x^2-2x-8\geq 0 \rightarrow x^2-2x-24=0$
$\rightarrow (x-6)(x+4)$

$\frac{6}{3}=2 \quad \frac{-4}{3}$

$\begin{array}{ccccc} & -\frac{4}{3} & & 2 & \\ + & 0 & - & 0 & + \end{array}$

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

(۵

الف) $y=\log(1-\log_3 x)>0$

$① \cap ② \Rightarrow \boxed{(0,3)} \rightarrow D(f)$

① $x>0$ ② $1-\log_3 x>0 \quad 1>\log_3 x \quad 3>x$

ب) $y=\log_2(1-\log_{\frac{1}{4}} x) \rightarrow$ ① $x>0$

② $1-\log_{\frac{1}{4}} x>0 \rightarrow 1>\log_{\frac{1}{4}} x$
$\rightarrow \frac{1}{4}<x$

$D(f)=①\cap② \Rightarrow \boxed{(\frac{1}{4}, +\infty)}$

(۶

$f(x)=\sqrt{\log_{0/1}\log_5(2x-1)} \Rightarrow$ ① $2x-1>0 \rightarrow x>\frac{1}{2}$

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

③ $\log_{0/1}\log_5 (2x-1)\geq 0 \rightarrow \log_5 (2x-1)\leq 1 \rightarrow 2x-1\leq 5$
$\rightarrow 2x\leq 6$
$\boxed{x\leq 3}$

$D(f) \rightarrow ①\cap②\cap③ \Rightarrow (1,3]$

(۷

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

$\boxed{D(f)=(2k\pi-\frac{2\pi}{3}, 2k\pi+\frac{2\pi}{3})}$

ب) $y=\sqrt{\log\frac{x-1}{x+1}}$ ① $\frac{x-1}{x+1}>0 \rightarrow \begin{array}{ccccc} & -1 & & 1 & \\ + & | & - & | & + \end{array}$

② $\log_{10}\frac{x-1}{x+1}\geq 0 \rightarrow \frac{x-1}{x+1}\geq 1 \rightarrow \frac{x-1}{x+1}-1\geq 0$

$\frac{-2}{x+1}\geq 0 \quad \begin{array}{ccc} & -1 & \\ - & | & + \end{array}$

$D(f)=①\cap② \Rightarrow \boxed{(-\infty,-1)}$

(۸)

$f(x) = \sqrt{(a+2)x^2 + ax + b} \rightarrow (-\infty, 2] \rightarrow$ دامنه $\quad b = ?$

$\hookrightarrow a = -2 \rightarrow \sqrt{-2x+b} \rightarrow -2x+b \geq 0 \rightarrow -2x \geq -b$

$x \leq \frac{b}{2} \longrightarrow \boxed{D = (-\infty, 2]}$

$\frac{b}{2} = 2 \rightarrow b = 4$

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(۹)

$f(x) = \sqrt{x^2 + 2x + 2 - m^2} \qquad \Delta \leq 0 \rightarrow b^2 - 4ac \leq 0$

$\hookrightarrow 4 - 4(2 - m^2) \leq 0$

$-1 \leq m \leq 1 \longleftarrow 4 - 8 + 4m^2 \rightarrow 4m^2 \leq 4$

اختلاف $\rightarrow 1 - (-1) \boxed{= 2}$

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(۱۰)

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

(۱) $4 - x^2 \geq 0 \rightarrow 4 \geq x^2 \rightarrow -2 \leq x \leq 2$

(۲) $[x] + [-x] + 1 \neq 0 \hookrightarrow [x] + [-x] \neq -1$

$[x] + [-x] = 0 \rightarrow x \in \mathbb{Z}$ ✓

$[x] + [-x] = -1 \quad x \notin \mathbb{Z}$ ✗

$D_f = (1) \cap (2) \rightarrow \{-2, -1, 0, 1, 2\}$

(D_f) شامل ۵ عدد صحیح