یازدهم تجربی :C بسمه تعالی زهرا آقایی

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۱) الف) $2x^3+3x^2-8x+3 \mid x-1$

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

$(x-1)(x+6)$

$\frac{1}{2} \quad -3$

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

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ب) $\rightarrow 2x^3+9x^2+10x+3 \mid x+1$

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

$(x+1)(x+6)$

$-\frac{1}{2} \quad 3$

$= \frac{(x+3)}{(x+\frac{1}{2})(x+3)(x+1)}$

$-\frac{1}{2} \quad -3 \quad -1$

$\boxed{D(f) = R-\{-\frac{1}{2}, -3, -1\}} \rightarrow$ جواب

۲) $y = \frac{x+3}{x^3-2x^2+2x-1} \rightarrow x^3-2x^2+2x-1 \mid x-1$

x^2-x+1

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

$D_f = R-\{1\}$

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$y = \sqrt{\frac{(x+3) \rightarrow (-3)}{x^3-2x^2+2x-1}} \geq 0$

$x^3-2x^2+2x-1 \mid x-1$

x^2-x+1

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

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

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

۳) $y = \frac{2}{x^2-5|x-1|-2x+5}$

(۱) $x>1 \quad x^2-5x+5-2x+5 \rightarrow x^2-7x+10$

(۲) $x=1 \quad \Delta = b^2-4ac = 4-4(5) = -16$ که ریشه ندارد ... صحیح

(۳) $x<1 \rightarrow x^2+5x-5-2x+5 \rightarrow x^2+3x=0 \rightarrow x \neq -3 \quad x \neq 0$

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

۴) الف) $\frac{x+3}{|2x+1|-|x+3|}$

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

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

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

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

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

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

$3x^2-2x-8 \geq 0 \to x^2-2x-24=0$

$\hookrightarrow (x-6)(x+4)$; $\frac{6}{3}$, $\frac{-4}{3}$

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

$+ \; 0 \; - \; 0 \; +$

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

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۵) الف) $y=\log(1-\log_3 x) > 0$

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

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

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

(2) $1-\log_{\frac{1}{2}} x > 0 \to 1 > \log_{\frac{1}{2}} x$

$\hookrightarrow \frac{1}{2} < x$

$D(f) =$ (1) $\cap$ (2) $\Rightarrow \boxed{(\frac{1}{2}, +\infty)}$

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۹) $f(x)=\sqrt{\log_{0/5} \log_5 (2x-1)} \Rightarrow$ (1) $2x-1>0 \to x>\frac{1}{2}$

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

$x>1$

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

$\hookrightarrow 2x \leq 6$

$\boxed{x \leq 3}$

$D(f) \Rightarrow$ (1) $\cap$ (2) $\cap$ (3) $\Rightarrow (1, 3]$

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۷) الف) $y=\log(2\cos x+1)$ $\quad 2\cos x+1>0 \to 2\cos x > -1$

$\to \cos x > -\frac{1}{2}$

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

ب) $y=\sqrt{\log \frac{x-1}{x+1}}$ (1) $\frac{x-1}{x+1}>0 \to$

$-1 \quad 1$

$+ \; - \; +$

(2) $\log_{10} \frac{x-1}{x+1} \geq 0 \to \frac{x-1}{x+1} \geq 1 \to \frac{x-1}{x+1}-1 \geq 0$

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

-1

$+ \; | \; -$

$D(f) =$ (1) $\cap$ (2) $\Rightarrow \boxed{(-\infty, -1)}$

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

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

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

$\frac{b}{2} = 2 \to \boxed{b = 4}$

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

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

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

اختلاف $\to 1 - (-1) \boxed{= 2}$

۱۰

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

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

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

$\begin{cases} [x] + [-x] = 0 \to x \in \mathbb{Z} \\ [x] + [-x] = -1 \quad x \notin \mathbb{Z} \end{cases}$

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

(D_f) شامل ۵ عدد صحیح

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