لینا ابراهیمی یازدهم C

۱-

الف) $y = \dfrac{x+3}{2x^3+3x^2-8x+3}$

$$\begin{array}{l|l} 2x^3+3x^2-8x+3 & x-1 \\ \hline -2x^3+2x^2 & 2x^2+5x-3 \\ \hline 5x^2-8x+3 & \\ -5x^2+5x & \\ \hline -3x+3 & \\ +3x-3 & \\ \hline 0 & \end{array}$$

$$y = \frac{x+3}{\underbrace{(x-1)}_{x=1}\underbrace{(2x^2+5x-3)}_{x=-3,\ x=\frac{1}{2}}}$$

$2x^2+5x-3=0 \rightarrow x^2+5x-6=0 \rightarrow (x-1)(x+6)=0$

$\rightarrow \frac{1}{2}$

$\rightarrow -3$

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

ب) $y = \dfrac{x+3}{2x^3+9x^2+10x+3}$

$$\begin{array}{l|l} 2x^3+9x^2+10x+3 & x+1 \\ \hline -2x^3-2x^2 & 2x^2+7x+3 \\ \hline +7x^2+10x+3 & \\ -7x^2-7x & \\ \hline +3x+3 & \\ -3x-3 & \\ \hline 0 & \end{array}$$

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

$x=-1$

$2x^2+7x+3=0 \rightarrow x^2+7x+6=0$

$(x+1)(x+6)=0 \Rightarrow x=-\frac{1}{2}, \quad x=-\frac{6}{2}=-3$

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

۲-

الف) $y = \dfrac{x+3}{x^3-2x^2+2x-1}$

$$\begin{array}{l|l} x^3-2x^2+2x-1 & x-1 \\ \hline -x^3+x^2 & x^2-x+1 \\ \hline -x^2+2x-1 & \\ +x^2-x & \\ \hline x-1 & \\ -x+1 & \\ \hline 0 & \end{array}$$

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

$x=1$

$\Delta = b^2-4ac = 1-4 = -3 \rightarrow \Delta<0 \rightarrow$ ریشه ندارد

$D_f = R - \{1\}$

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

$\dfrac{x+3}{x^3-2x^2+2x-1} \geq 0$

$x+3=0 \rightarrow x=-3$

$$\begin{array}{l|l} x^3-2x^2+2x-1 & x-1 \\ \hline -x^3+x^2 & x^2-x+1 \\ \hline -x^2+2x-1 & \\ +x^2-x & \\ \hline x-1 & \\ -x+1 & \\ \hline 0 & \end{array}$$

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

$x=1$

$b^2-4ac = 1-4 = -3 \quad \Delta<0$

$$\begin{array}{ccccc} & -3 & & 1 & \\ \hline + & 0 & - & \text{ت} & + \end{array}$$

$D_f = (-\infty, -3] \cup (1, +\infty)$

۳-

$y = \dfrac{2}{x^2-5|x-1|-2x+5}$ $\xrightarrow{\text{مخرج نباید صفر شود}}$ $\xrightarrow{x\geq 1} x^2-5x+5-2x+5 \neq 0 \Rightarrow x^2-7x+10 \neq 0$

$\Rightarrow (x-2)(x-5) \neq 0 \to x\neq 2 , x\neq 5$

$\xrightarrow{x<1} x^2+5x-5-2x+5 \Rightarrow x^2+3x \neq 0 \Rightarrow x(x+3)\neq 0 \Rightarrow x\neq 0 , x\neq -3$

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

۴-

الف) $y = \dfrac{x+3}{|2x+1|-|x+3|}$ $\quad |2x+1|-|x+3| \neq 0 \Rightarrow |2x+1| \neq |x+3|$

$\xrightarrow{\text{توان ۲}} 4x^2+4x+1 \neq x^2+6x+9 \Rightarrow 3x^2-2x-8 \neq 0 \xrightarrow{\text{روش}} x^2-2x-24 \neq 0 \to (x-6)(x+4) \neq 0 \to x\neq 2$

$\to x \neq -\frac{4}{3}$

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

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

$\xrightarrow{\text{توان ۲}} 4x^2+4x+1 \geq x^2+6x+9 \Rightarrow 3x^2-2x-8 \geq 0 \xrightarrow{\text{روش}} x^2-2x-24=0 \to (x-6)(x+4)=0$

$\to x=2$

$\to x=-\frac{4}{3}$

$\begin{array}{c} -\frac{4}{3} \quad 2 \\ \hline + \quad - \quad + \end{array}$ $\quad D_f = (-\infty, -\frac{4}{3}] \cup [2,+\infty)$

۵-

الف) $y = \log_2(1-\log_3 x)$ $\quad 1-\log_3 x > 0 \to \log_3 x < 1 \to x<3$

$\log_3 x \to x > 0 \qquad D_f = (0,3)$

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

$\log_{\frac{1}{2}} x \to x > 0 \qquad D_f = (\frac{1}{2},+\infty)$

۶-

$f(x) = \sqrt{\log_{0.5} \log_5 (2x-1)}$ $\quad \log_5(2x-1) > 0 \to 2x-1 > 1 \to 2x > 2 \to x > 1$

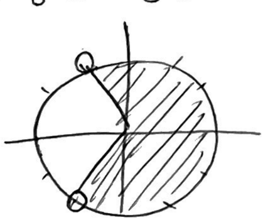
$2x-1 > 0 \to 2x > 1 \to x > \frac{1}{2}$

$\log_{0.5}\log_5(2x-1) \geq 0 \to \log_5(2x-1) \leq 1 \to 2x-1 \leq 5 \to 2x \leq 6 \to x \leq 3$

$D_f = (1,3]$

۷-

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



ب) $y = \sqrt{\log \frac{x-1}{x+1}}$ $\quad \frac{x-1}{x+1} \geq 0 \rightarrow x=1,\ x=-1$ $\quad$ -1, 1: + ∄ - ∘ + $\quad$ ۷ـ

$(-\infty,-1) \cup [1,+\infty)$

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

$\rightarrow \frac{-2}{x+1} \geq 0$ $\quad$ -1: + ∄ - $\quad \rightarrow (-\infty,-1)$ $\quad D_f = (-\infty,-1)$

$f(x) = \sqrt{(a+2)x^2+ax+b}$ $\quad a+2=0 \rightarrow a=-2$ $\quad$ ۸ـ

$D_f = (-\infty, 3]$ $\quad ax+b \xRightarrow{a=-2} -2x+b \xrightarrow[\text{عبارت صفر}]{\text{به ازای } x=3} -2\times 3+b=0$

$b = 6$

$f(x) = \sqrt{x^2+2x+2-m^2}$ $\quad \Delta = b^2-4ac \rightarrow 4-8+4m^2=0$ $\quad$ ۹ـ

$\rightarrow 4m^2-4=0 \rightarrow 4(m^2-1)=0$

$D_f = \mathbb{R}$ بیشترین مقدار $\Delta=0$ $\quad$ min شد $a>0$ $\quad \rightarrow (m-1)(m+1)=0 \rightarrow m=\pm 1$

$m_{max} - m_{min} = 1-(-1) = 2$

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

-2, 0, 2: - + - $\quad \rightarrow [-2,2]$

$[x]+[-x]+1 \neq 0 \rightarrow [x]+[-x] \neq 1 \rightarrow D_f = \mathbb{Z}$

$D_f = \{-2,-1,0,1,2\}$