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تکلیف فصلی یازدهم C

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

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

$y = \dfrac{x+3}{(x-1)(2x^2+5x-3)}$

$x = 1$

$x = -3$

$x = \frac{1}{2}$

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

$x=\frac{1}{2}\,,\; x=-3$

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

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ب) $y = \dfrac{x+3}{2x^3+9x^2+10x+3}$

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

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

$x = -1$

$x = -\frac{1}{2}$

$x = -3$

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

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

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

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۸- الف) $y=\frac{x+2}{|2x+1|-|x+2|}$ $\quad |2x+1|-|x+2|\neq 0$

$\Rightarrow |2x+1|\neq |x+2| \xrightarrow{\text{توان ۲}} 4x^2+4x+1\neq x^2+4x+4 \Rightarrow 3x^2-2x-1\neq 0$

$\xrightarrow{\text{ریشه}} x^2-2x-3\neq 0 \longrightarrow (x-3)(x+1)\neq 0 \longrightarrow x\neq 3$

$x\neq -\frac{1}{3}$

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

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

$\xrightarrow{\text{توان ۲}} 4x^2+4x+1\geq x^2+4x+4 \Rightarrow 3x^2-2x-3\geq 0 \xrightarrow{\text{ریشه}} 3x^2-2x-3=0$

$\longrightarrow (x-3)(x+1)=0 \begin{cases} x=3 \\ x=-\frac{1}{3} \end{cases}$

$D_f=(-\infty,-\frac{1}{3}]\cup[3,+\infty)$

۹- الف) $y=\log_{\frac{1}{2}}^{(1-\log_{\frac{1}{2}}^{x})}$ $\quad 1-\log_{\frac{1}{2}}^{x}>0 \longrightarrow \log_{\frac{1}{2}}^{x}<1 \longrightarrow x>\frac{1}{2}$

$\log_{\frac{1}{2}}^{x} \longrightarrow x>0$

$D_f=(0,\frac{1}{2})$

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

$\log_{\frac{1}{4}}^{x} \longrightarrow x>0$ $\quad D_f=(\frac{1}{2},+\infty)$

۶- $f(x)=\sqrt{\log_{0.1}^{\log_{0.5}^{(2x-1)}}}$ $\quad \log_{5}^{(2x-1)}>0 \longrightarrow 2x-1>1 \longrightarrow 2x>2 \longrightarrow x>1$

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

$\log_{0.1}^{\log_{0.5}^{(2x-1)}}\geq 0 \longrightarrow \log_{5}^{(2x-1)}\geq 1 \longrightarrow 2x-1\geq 5 \rightarrow 2x\geq 6 \rightarrow x\geq 3$

$\longrightarrow x\geq 3$ $\quad D_f=[3,+\infty)$

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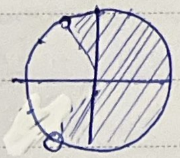
الف) $y = \log(2\cos x + 1)$ $\quad 2\cos + 1 > 0 \rightarrow 2\cos x > -1$

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

$D_f = (2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3})$



ب) $y = \sqrt{\log \frac{x-1}{x+1}}$ $\quad \frac{x-1}{x+1} > 0 \rightarrow x = 1,\ x = -1$ $\quad$ $-1 \quad 1$: $+ \ | \ - \ | \ +$

$D_1 = (-\infty, -1] \cup [1, +\infty)$

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

$\rightarrow \frac{-2}{x+1} \geq 0$ $\quad$ -1: $+ \ | \ -$ $\quad \rightarrow D_2 = (-\infty, -1)$

$D_f = (-\infty, -1)$

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

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

$b = 6$

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

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

$D_f = \mathbb{R}$ عبارت همیشه مثبت $\Delta = 0$ $\quad$ min عبارت $a > 0$ $\quad \rightarrow (m-1)(m+1) = 0 \rightarrow m = \pm 1$

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

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

$-2 \quad 2$: $- \ | \ + \ | \ -$ $\quad \xrightarrow{D_f} [-2, 2]$

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

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