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لیانا ابراهیمی یازدهم ج

1-

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

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

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

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

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

$\rightarrow -3$

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

ب) $y = \dfrac{x+3}{2x^3+9x^2+10x+3}$

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

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

$x=-1$

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

$(x+1)(x+6)=0 \left\langle \begin{array}{l} x=-\frac{1}{2} \\ x=-\frac{6}{2}=3 \end{array}\right.$

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

2-

5

الف) $y = \dfrac{x+3}{x^3-2x^2+2x-1}$

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

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

$x=1$

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

$D_f = R - \{1\}$

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

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

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

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

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

$x=1$

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

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

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

-۳

$$y=\frac{2}{x^2-5|x-1|-2x+5}$$ مخرج نباید صفر شود

$\xrightarrow{x\geq 1} x^2-5x+5-2x+5\neq 0 \Rightarrow x^2-7x+10\neq 0$

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

۲

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

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

-۴

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

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

۲

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

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

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

$-\frac{4}{3}$		2	
$+$	ϕ	$-$	ϕ $+$

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

-۵

۲

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

$\log_3 x \to x\geq 0$ $\quad D_f=(0,3)$

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

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

-۶

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

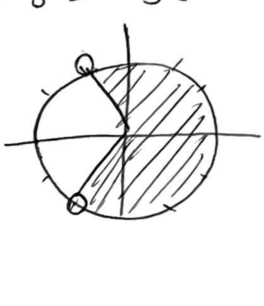
$2x-1>0 \to 2x>1 \to x>\frac{1}{2}$

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

$D_f=(1,3]$

-۷

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



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

۲

Subject:
Date

ب) $y=\sqrt{\log\frac{x-1}{x+1}}$ $\quad \frac{x-1}{x+1}\geq 0 \to \begin{matrix}x=1\\x=-1\end{matrix}$ $\quad \frac{-1 \quad 1}{+ \;\nexists\; - \;\phi\; +}$ —۷

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

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

$\to \frac{-2}{x+1}\geq 0 \quad \frac{-1}{+\;\nexists\;-} \to (-\infty,-1) \quad D_f=(-\infty,-1)$

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

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

$b=4$

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

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

$D_f=\mathbb{R}$ شرط $\Delta=0$ $\quad$ شرط min $a>0$ $\quad \to (m-1)(m+1)=0 \to m=\pm 1$

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

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

$\frac{-2 \quad 2}{- \;\phi\; + \;\phi\; -} \to [-2,2]$

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

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

PAPCO