آنی زنشاه ادری :

۱)

الف) $y=\dfrac{x+3}{2x^3+3x^2-8x+3}$ $\quad \div(x-1)$

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

$(x-1)(2x^2+5x-3)$

x^2+5x-6

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

$(x+3)(2x-1)$

$x\neq$

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

ب) $y=\dfrac{x+3}{2x^3+9x^2+10x+3}$ $\quad \div(x+1)$

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

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

$(2x+1)(x+\frac{6}{2})$

$(2x+1)(x+3)$

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

۲)

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

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

$R-\{1\}$

$(x-1)(x^2-x+1)$

$\neq0 \quad \neq0$

ریشه ندارد

$\Delta<0$

ب) $y=\sqrt{\dfrac{x+3}{x^3-2x^2+2x-1}}\geq0$

$(x-1)(x^2-x+1)$

$\Delta<0$

$-3 \quad 1$

$+ \quad - \quad +$

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

۳)

$\dfrac{2}{x^2-5|x-1|-2x+5\neq0}$ $\Rightarrow$

$x<1$: $x^2+5x-5-2x+5$, $x=0,-3$

$x\geq1$: $x^2-5x+5-2x+5$

$(x-5)(x-2)=0$, $x=5,2$

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

$x=1\longrightarrow-14\longrightarrow$ صفر نمی‌شود

۴)

الف) $y=\dfrac{x+3}{|2x+1|-|x+3|\neq0}$

$|2x+1|\neq|x+3|$

$2x+1\neq x+3$

$x\neq2$

$2x+1\neq-x-3$

$3x\neq-4$

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

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

ب) $y=\sqrt{|2x+1|-|x+3|}$

$(2x+1)^2\geq(x+3)^2\rightarrow4x^2+4x+1\geq x^2+6x+9$

$\rightarrow3x^2-2x-8\geq0$

$(x-\frac{6}{3})(3x+4)\geq0$

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

$+ \quad - \quad +$

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

Scanned with CamScanner

(۵

الف) $y = \log_{\frac{1}{2}}^{m}(1-\log_{2}^{m})$

$1-\log_{2}^{m} > 0$

I $2 > m \quad 1 > \log_{2}^{m}$

$0 < m < 2$

$D = (0,2)$

ب) $y = \log_{2}^{(1-\log_{\frac{1}{2}}^{m})}$

$1-\log_{\frac{1}{2}}^{m} > 0 \rightarrow 1 > \log_{\frac{1}{2}}^{m} \rightarrow \frac{1}{2} < m$

$D = \text{I} \cap \text{II} = (\frac{1}{2}, +\infty)$

(۶

$f(m) = \sqrt{\log_{0/5}^{\log_{5}^{(2m-1)}}}$

$2m-1 > 0 \rightarrow m > \frac{1}{2}$ (I)

$\log_{5}^{2m-1} > 0 \rightarrow m > 1$ (II)

$\log_{0/5}^{\log_{5}^{(2m-1)}} \geq 0 \rightarrow m \leq 2$ III

$D = \text{I} \cap \text{II} \cap \text{III} = (1, 2]$

(۷

الف) $y = \log(2\cos m + 1)$

$2\cos m + 1 > 0 \rightarrow 2\cos m > -1 \rightarrow \cos m > -\frac{1}{2}$

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

ب) $y = \sqrt{\log \frac{m-1}{m+1}}$

$\frac{m-1}{m+1} > 0$ (I)

$\log_{10}^{\frac{m-1}{m+1}} \geq 0 \rightarrow \frac{m-1}{m+1} \geq 1 \rightarrow \frac{m-1}{m+1} - 1 \geq 0$

$\rightarrow \frac{-m-1+m-1}{m+1} \geq 0 \rightarrow \frac{-2}{m+1} \geq 0$ (II)

$(-\infty, -1)$

(۸

$f(m) = \sqrt{(a+2)m^2 + am + b} \rightarrow D = (-\infty, 2]$

$a = -2 \rightarrow \sqrt{-2m+b}$

$-2m + b \geq 0 \rightarrow -2m \geq -b \rightarrow m \leq \frac{b}{2}$

$D = (-\infty, 2] \rightarrow \frac{b}{2} = 2 \rightarrow b = 4$

(۹

$\Delta \leq 0 \rightarrow b^2 - 4ac \leq 0 \quad 4 - 4(2 - m^2) \leq 0 \rightarrow -4 + 4m^2 \leq 0 \rightarrow m^2 \leq 1$

$\rightarrow -1 \leq m \leq 1$

$\rightarrow 1 - (-1) = 2$

۱۰)

$$\frac{\sqrt{۴-x^2}}{[x]+[-x]+1}$$

$x \notin Z \longrightarrow [x]+[-x] = ۰$

$x \in Z$ → تخریب شده → -1

$۴-x^2 \geq ۰$

$x^2 \leq ۴ \longrightarrow -۲ \leq x \leq ۲$ ۵ عدد