نام و نام خانوادگی ......یکتا موسوی...... پاسخنامه تشریحی تکلیف شماره ...۳... کلاس ......۲......

۱

الف)

$$2x^3+3x^2-8x+3 \div (x-1) = 2x^2+5x-3$$

$$-2x^3+2x^2 \quad ; \quad 5x^2-8x+3 \quad ; \quad -5x^2+5x \quad ; \quad -3x+3 \quad ; \quad -3x+3 \quad ; \quad 0$$

$$2x^2+5x-3 \rightarrow x=\frac{1}{2} \quad , \quad x=\frac{-6}{2}=-3$$

$$y=\frac{x+3}{(2x^2+5x-3)(x-1)} \quad x+3 \rightarrow x=-3 \quad ; \quad x=\frac{1}{2},-3 \quad ; \quad x=1$$

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

ب)

$$2x^3+9x^2+10x+3 \div (x+1) = 2x^2+7x+3 \rightarrow x^2+7x+6$$

$$-2x^3-2x^2 \quad ; \quad 7x^2+10x+3 \quad ; \quad -7x^2-7x \quad ; \quad 3x+3$$

$$x=\frac{-1}{2} \quad , \quad x=\frac{-6}{2}=-3$$

$$y=\frac{x+3}{(2x^2+7x+3)(x+1)} \rightarrow D_f=\mathbb{R}-\{-\tfrac{1}{2},-3,-1\}$$

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

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الف)

$$x^3-2x^2+2x-1 \div (x-1) = x^2-x+1 \rightarrow \Delta<0$$

$$-x^3+x^2 \quad ; \quad -x^2+2x-1 \quad ; \quad +x^2-x \quad ; \quad x-1 \quad ; \quad 0$$

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

$$D_f=\mathbb{R}-\{1\}$$

ب) مطابق سوال قبل

$$\sqrt{\frac{x+3}{(x^2-x+1)(x-1)}}\geq 0 \quad x=-3 \quad ; \quad \Delta<0 \quad ; \quad x=1$$

$$\begin{array}{c|cc} & -3 & 1 \\ \hline & + \; 0 \; - & - \; + \end{array} \rightarrow D_f=(-\infty,-3]\cup(1,+\infty)$$

۳

$$x^2-5|x-1|-2x+5$$

$$x\geq 1 \rightarrow x^2-5x+5-2x+5 \rightarrow x^2-7x+10 \rightarrow (x-5)(x-2)=0 \rightarrow x=5,2$$

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

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

۴

الف)

$$|2x+1|-|x+3|=0 \rightarrow (|2x+1|=|x+3|)^2 \rightarrow (2x+1)^2=(x+3)^2 \rightarrow 4x^2+4x+1=x^2+6x+9$$

$$3x^2-2x-8=0 \rightarrow x=\frac{2\pm\sqrt{4+4(3)(8)}}{6} \rightarrow x_1=2 \; , \; x_2=\frac{-4}{3} \rightarrow D_f=\mathbb{R}-\{2,-\tfrac{4}{3}\}$$

ب)

$$|2x+1|-|x+3|\geq 0 \rightarrow (|2x+1|\geq|x+3|)^2 \rightarrow 4x^2+4x+1\geq x^2+6x+9$$

$$3x^2-2x-8\geq 0 \rightarrow (x-2)(x+\tfrac{4}{3})\geq 0 \quad \begin{array}{c|cc} & -\frac{4}{3} & 2 \\ \hline & + \; 0 \; - & 0 \; + \end{array} \quad D_f=(-\infty,-\tfrac{4}{3}]\cup[2,+\infty)$$

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الف)

$$1-\log_3 x>0 \rightarrow \log_3 x<1 \rightarrow \begin{cases} x>0 \\ x<3 \end{cases} \rightarrow D_f: 0<x<3$$

$$D_f=(0,3)$$

ب)

$$1-\log_{\frac{1}{2}} x>0 \rightarrow \log_{\frac{1}{2}} x<1 \xrightarrow{0<\frac{1}{2}<1} \begin{cases} x>\frac{1}{2} \\ x>0 \end{cases} \rightarrow D_f=(\tfrac{1}{2},+\infty)$$

$$D_f=x>\tfrac{1}{2}$$

$\log_{\frac{1}{2}} \left(\log_{5}^{2x-1}\right) \geq 0 \longrightarrow \begin{cases} 2x-1>0 \to 2x>1 \to \boxed{x>\frac{1}{2}} \ (I \\ \log_{5}^{2x-1}>0 \to 2x-1>1 \to 2x>2 \to x>1 \\ \log_{5}^{2x-1} \geq 1 \to 2x-1 \geq 5 \to 2x \geq 6 \to \boxed{x \geq 3} \ (II \end{cases}$ ۶

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

الف) $\log_{1}^{2\cos x+1} > 0 \rightarrow 2\cos x+1>0 \rightarrow 2\cos x > -1 \rightarrow \cos x > -\frac{1}{2}$

$Df = \left[2k\pi - \frac{4\pi}{3} , 2k\pi + \frac{2\pi}{3}\right]$

ب) $\log_{1}^{\frac{x-1}{x+1}} \geq 0 \quad \begin{cases} 1) \ \frac{x-1}{x+1} > 0 \quad x=1,\ x=-1 \quad \underset{+}{}\overset{-1}{|}\underset{-}{}\overset{1}{|}\underset{+}{} \quad (-\infty,-1)\cup(1,+\infty) \ (I \\ 2) \ \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1-x-1}{x+1} \rightarrow \frac{-2}{x+1} \geq 0 \quad x=-1 \quad (-\infty,-1) \ (II \end{cases}$ ۷

$\cap \rightarrow \boxed{Df = (-\infty,-1)}$

تابع خطی ← $a=-2 \rightarrow \sqrt{-2x+b}$ ← ریشه ← $x = \frac{-b}{a} \rightarrow \frac{+b}{+2} = 3 \rightarrow \boxed{b=6}$

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$\Delta < 0 \rightarrow 4 - 4(2-m^2) < 0 \rightarrow 4 - 8 + 4m^2 < 0 \qquad 4m^2 - 4 < 0$

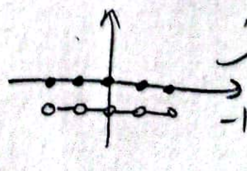
$-1 < m < 1 \leftarrow \underset{+}{}\overset{-1}{|}\underset{-}{}\overset{1}{|}\underset{+}{} \qquad m = \pm 1 \leftarrow 4(m^2-1) < 0$

$m \rightarrow 1-(-1) = \boxed{2}$ ۹

واحد حاصل

$[x]+[-x]+1 \neq 0 \rightarrow [x]+[-x] \neq -1$

مجموع فقط می‌تواند اعداد صحیح بگیرد



به ازای اعداد صحیح صفر

به ازای اعداد غیر صحیح ۱−

$\sqrt{4-x^2} \rightarrow 4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow \boxed{-2 \leq x \leq 2} \rightarrow Df = \{-2,-1,0,1,2\}$ ۱۰

۵ عدد صحیح ←