نام و نام خانوادگی ....فرید غازی.... پاسخنامه تشریحی تکلیف شماره .... کلاس ......

1

$y=\frac{x^2+x+2}{x-1}$, $yx-y=x^2+x+2 \Rightarrow x^2+x+2-yx+y=0$

$x^2+x(1-y)+2+y=0 \xrightarrow{\Delta\geq 0} (1-y)^2-4(1)\underbrace{(2+y)}_{8+4y}\geq 0 \to y^2-2y+1-8-4y\geq 0$

$y^2-6y-7\geq 0 \Rightarrow (y-7)(y+1)\geq 0 \Longrightarrow$

	-1		7	
$+$		$-$		$+$

$(-\infty,-1]\cup[7,+\infty)$

2

$y=2x^2-5x+1 \to \min$

$\frac{-b}{2a}=\frac{5}{4}$

$2\times(\frac{25}{16})-5(\frac{25}{16})+1=$

$\frac{25\times2}{8\times2}-\frac{125}{16}+1 \Rightarrow \frac{50-125+16}{16}=$ $\boxed{(\frac{91}{16},+\infty)}$

$\sqrt{-x^2+6x-5}$

$\frac{-b}{2a}=\frac{-6}{2(-1)}=3$

$-(3)^2+6(3)-5=4$

$[0,4]$

$y=\sqrt{x^3-3x^2+6x+1}$

$\mathbb{R}=[0,+\infty)$

$\log(x^3-6x^2+7x+4)$

3

$y=\frac{3x+1}{2x-6}$

$2yx-6y=3x+1$

$2yx-3x=6y+1$

$x(2y-3)=6y+1$

$x=\frac{6y+1}{2y-3}$ $\mathbb{R}-\{\frac{3}{2}\}$

$y=\sqrt{\frac{4x+1}{x-2}}$

$y^2=\frac{4x+1}{x-2}$ $x=\frac{2y^2+1}{y^2-4}$

$y^2x-2y^2=4x+1$

$y^2x-4x=2y^2+1$ $\mathbb{R}-\{\pm2\}$

$x(y^2-4)=2y^2+1$

$y=\frac{x^2+4}{\sqrt{x^2+3}}$

$\min x=0$

$\frac{4\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}=\frac{4\sqrt{3}}{3}$

$R_f=[\frac{4\sqrt{3}}{3},+\infty)$

$y=\underset{0}{x^2}+\frac{1}{\underset{0}{x^2}+4}$

$\min x=0$

$[0,+\infty)=R_f$

4

$y=\frac{3x^2+4}{x^2-1} \Rightarrow yx^2-y=3x^2+4 \to yx^2-3x^2=y+4 \Rightarrow x^2(y-3)=y+4$

$x^2=\frac{y+4}{y-3} \Rightarrow x=\sqrt{\frac{y+4}{y-3}}$

	-4		3	
$+$		$-$		$+$

$\Rightarrow (-\infty,-4]\cup(3,+\infty)$

5

$y=\frac{2\sin x-1}{\sin x+3} \Rightarrow y\sin x+3y=2\sin x-1 \Rightarrow y\sin x-2\sin x=-1-3y$

$\sin x(y-2)=-1-3y \Rightarrow \sin x=\frac{-1-3y}{y-2} \Rightarrow -1\leq\frac{-1-3y}{y-2}\leq 1$

$\frac{-1-3y}{y-2}-1\leq 0 \Rightarrow \frac{-1-3y-y+2}{y-2}\leq 0 \Rightarrow \frac{1-4y}{y-2}\leq 0$

	$\frac{1}{4}$		2	
$-$		$+$		$-$

$0\leq\frac{-1-3y}{y-2}+1 \Rightarrow 0\leq\frac{-1-3y+y-2}{y-2} \Rightarrow 0\leq\frac{-3-2y}{y-2}$

	$-\frac{3}{2}$		2	
$-$		$+$		$-$

فربد غفاری

$f(x)=\frac{x^2-x+\frac14}{x^2-x+1} \xRightarrow{\Delta=} (-1)^2-4(1)(1)=-3 \Rightarrow \Delta<0 \rightarrow$ ریشه ندارد $\quad D_f=\mathbb{R}$ ۶

$yx^2-yx+y=x^2-x+\frac14 \rightarrow x^2-yx^2-x+yx+\frac14-y=0$

$(1-y)x^2+(-1+y)x+\frac14-y \xRightarrow{\Delta\ge0} (-1+y)^2-4(1-y)(\frac14-y)\ge0 \Rightarrow -3y^2-3y\ge0$

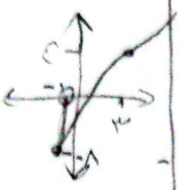
$\boxed{[-1,0]} \qquad -3y(y+1)\ge0$

$y=|2x-2|-|x-3|$

$x>3$: $2x-2-x+3 \rightarrow x+1 \quad x>3$

$1<x<3$: $2x-2+x-3 \rightarrow 3x-5 \quad 1<x<3$

$x<1$: $-2x+2+x-3 \rightarrow -x-1 \quad x<1$

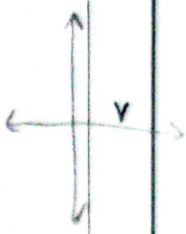


$y=|x-3|+|x+1|$ ۷

$x>3 \rightarrow x-3+x+1=2x-2$

$-1<x<3 \rightarrow -x+3+x+1 \Rightarrow 4$

$x<-1 \rightarrow -x+3-x-1 \Rightarrow -2x+2$



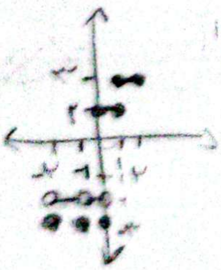
$|x-2|-|2x+2|\le1 \Rightarrow |x-2|-|2x+2|-1\le0 \Rightarrow x-2-2x-2-1\le0 \quad (x>2)$

$-x-5\le0 \Rightarrow -x\le5 \quad x\ge-5$ ۸

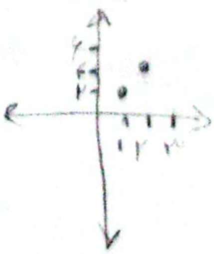
$-1\le x\le2$: $-x+2-2x-2-1\le0 \Rightarrow -3x-1\le0 \Rightarrow -1\le3x \Rightarrow -\frac13\le x$

$x\le-1$: $-x+2+2x+2-1\le0 \Rightarrow x+3\le0 \Rightarrow x\le-3$

$y=[x]+[3-x]$



$y=3x-[x]$ ۹



$y=\sin^2x-\sin x+1 \qquad \sin x=t$

$t^2-t+1 \Rightarrow \frac{-b}{2a}=\frac12$

$(\frac12)^2-\frac12+1=\frac14-\frac12+1=\frac34$

$(1)^2-1+1=1 \qquad R_f=[\frac34,3]$

$(-1)^2-(-1)+1=3$

$\sin^4x+\sin^2x+1 \qquad \sin^2x=t$ ۱۰

$t^2+t+1 \Rightarrow \frac{-b}{2a}=-\frac12$

$(-\frac12)^2+(-\frac12)+1=\frac14-\frac12+1=\frac34$

$(1)^2+1+1=3 \qquad [\frac34,3]$

$-1=x$