نام و نام خانوادگی ....عرفان عبداللهی........ پاسخنامه تشریحی تکلیف شماره ...سه... کلاس ....دوازدهم تسر A....

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$y=\frac{x^2+x+2}{x-1} \to yx-y=x^2+x+2 \to 0=x^2+(1-y)x+2+y$

$x=\frac{-(1-y)\pm\sqrt{(1-y)^2-4(2+y)}}{2} \to (1-y)^2-4(y+2)\geq 0 \to y^2-6y-7\geq 0$

$\Sigma=+7,\ -1,\ +7$; $+\ \ -\ \ +$

$y\notin(-1,+7)$

$R_f=\mathbb{R}-(-1,+7)$

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الف) $y=2x^2-5x+1$

$+1$ ، $\frac{5}{4}$ ، $-\frac{17}{8}$

$R_f=[-\frac{17}{8},+\infty)$

ب) $y=\sqrt{-x^2+6x-8} \to \sqrt{(-\infty,4]}$

$-x^2+6x-8$; 4 ; -8 ; $1\ 2\ 3\ 4$ $\to R=(-\infty,4]$ $R_f=[0,2]$

ج) $y=\sqrt{x^7-3x^2+4x+1}$

$g(x)=x^7-3x^2+4x+1 \to R_g=\mathbb{R}$

$y=\sqrt{(-\infty,+\infty)} \to R_f=[0,+\infty)$

د) $\log(x^3-6x^2+7x+4)$

$g(x)=x^3-6x^2+7x+4 \to R_g=(-\infty,+\infty)$

$(-\infty,+\infty)\xrightarrow{\log} R_f=(-\infty,+\infty)$

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

$\frac{3}{2}$

ب) $y=\sqrt{\frac{4x+1}{x-2}} \to \sqrt{(-\infty,+\infty)-\{4\}} \to R_f=[0,+\infty)-\{2\}$

$\frac{4x+1}{x-2}$; 4 ; 2 $\to R=\mathbb{R}-\{4\}$

ج) $y=\frac{x^2+4}{\sqrt{x^2+3}}=\sqrt{x^2+3}+\frac{1}{\sqrt{x^2+3}}$

$y_{min}=\frac{4}{\sqrt3}=\frac{4\sqrt3}{3} \leftarrow \frac{x^2+4}{\sqrt{x^2+3}}\geq 2$ $\sqrt{x^2+3}\neq 1 \to x_{min}=0 \to y_{min}=\sqrt3$

$R_f=[\frac{4\sqrt3}{3},+\infty)$

د) $y=x^2+\frac{1}{x^2+4} \to x^2\geq 0$ ، $\frac{1}{x^2+4}>0$

$x_{min}=0$ ، $y_{min}=\frac14$ $\frac{1}{4}=\frac{1}{4}$

$R_f=[\frac14,+\infty)$

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1) $y=\frac{3x^2+4}{x^2-1} \to yx^2-y=3x^2+4 \to 0=(3-y)x^2+4+y$

$y\neq 3$; $x=\frac{0\pm\sqrt{4(y-3)(y+4)}}{3-y} \to 4(y+4)(y-3)\geq 0 \to$ $-4\ \ +3$; $+\ \ -\ \ +$; غ

$y=3$; $0=4+y \to y=-4 \to$ غق

$y\in\mathbb{R}-(-4,+3]$

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

2) $\frac{3x^2+4}{x^2-1} \to x^2_{min}=0 \to \frac{4}{-1}=-4$

$x^2_{max}=+\infty \to \frac{3}{1}=3$

$x^2-1=0 \to R_f=(-\infty,-4]\cup(3,+\infty)$

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1) $y=\frac{2\sin x-1}{\sin x+3} \to y\sin x+3y=2\sin x-1 \to (y-2)\sin x=-(3y+1)$

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

$\frac{4y-1}{2-y}\leq 0$; $\frac14\ \ 2$; $-\ \ +\ \ -$; غ $\to \frac14\leq y<2$ (II)

$0\leq\frac{2y+3}{2-y} \to -\frac32\leq y<2$ (I) ; $-\frac32\ \ 2$; $-\ \ +\ \ -$; غ

$(I)\cap(II)=R_f=[-\frac32,\frac14]$

2) $y=\frac{\sin x-1}{\sin x+3\neq 0}$

$\to \sin x_{max}=1 \to \frac{2-1}{1+3}=-\frac14$

$\sin x_{min}=-1 \to \frac{-2-1}{-1+3}=-\frac32 \to R_f=[-\frac32,-\frac14]$

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$f(x)=\dfrac{x^2-x+\frac14}{x^2-x+1} \to x^2-x+1\neq 0 \to \Delta<0 \quad D_f=\mathbb{R}$

$y=\dfrac{x^2-x+\frac14}{x^2-x+1} \to yx^2-yx+y=x^2-x+\frac14 \to 0=(1-y)x^2+(y-1)x+\frac14-y$

$x=\dfrac{(1-y)\pm\sqrt{(y-1)^2-(1-4y)(1-y)}}{2(1-y)}$; $y\neq 1$

$y^2+1-2y-(4y^2-5y+1)\geq 0$

$-3(y^2-y)\geq 0 \to y-y^2\geq 0$

$0 \quad +1$

$0=\frac14-y \to y=\frac14$ قق ; $y=1$

$R_f=[0,+1)$

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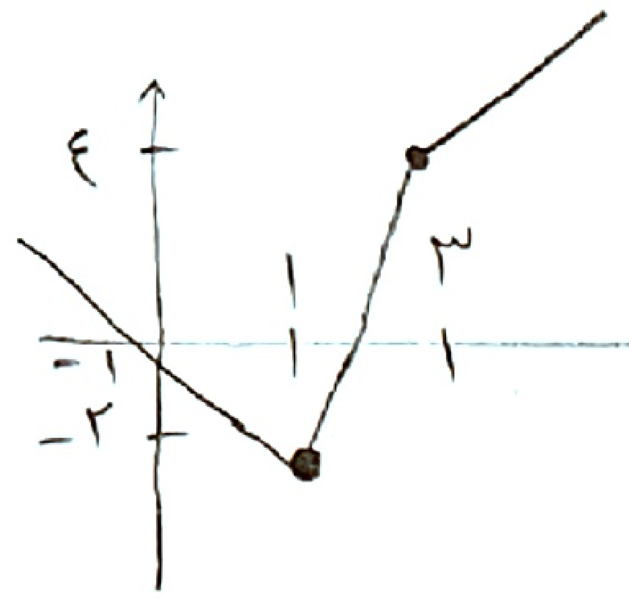
الف) $y=|2x-2|-|x-3|$

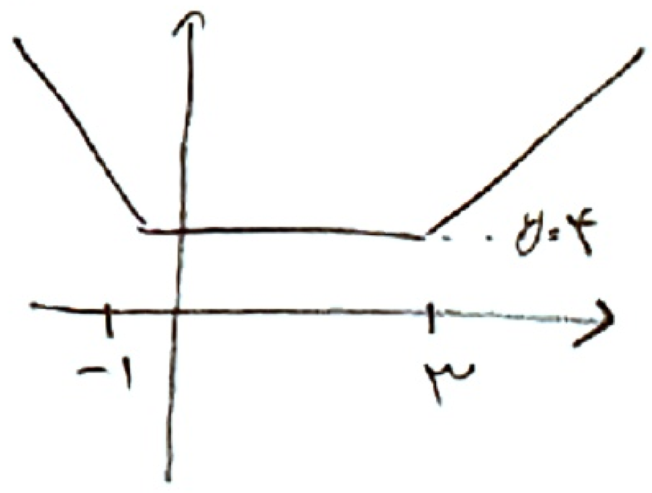
$\begin{cases} -x-1 & x<1 \\ 3x-5 & 1\leq x\leq 3 \\ x+1 & x>3 \end{cases}$



$R_f=[-2,+\infty)$

ب) $y=|x-3|+|x+1|$

$\begin{cases} -2x+2 & x<-1 \\ +4 & -1\leq x\leq 3 \\ 2x-2 & x\geq \end{cases}$



$R_f=[4,+\infty)$

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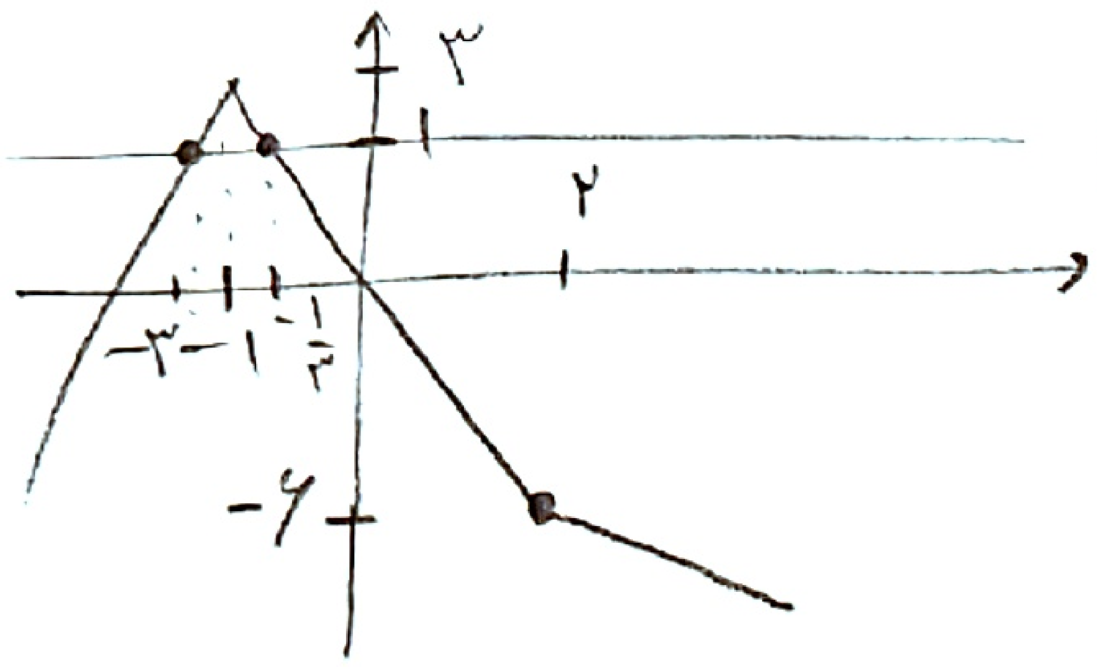
$y=|x-2|-|2x+2|\leq 1 \longrightarrow x\in(-\infty,-3]\cup[-\frac13,+\infty)$



$\begin{cases} x+4 & x<-1 \\ -3x & -1\leq x<2 \\ -x-4 & x\geq 2 \end{cases}$

$-3x=1 \to x=-\frac13$

$x+4=1 \to x=-3$

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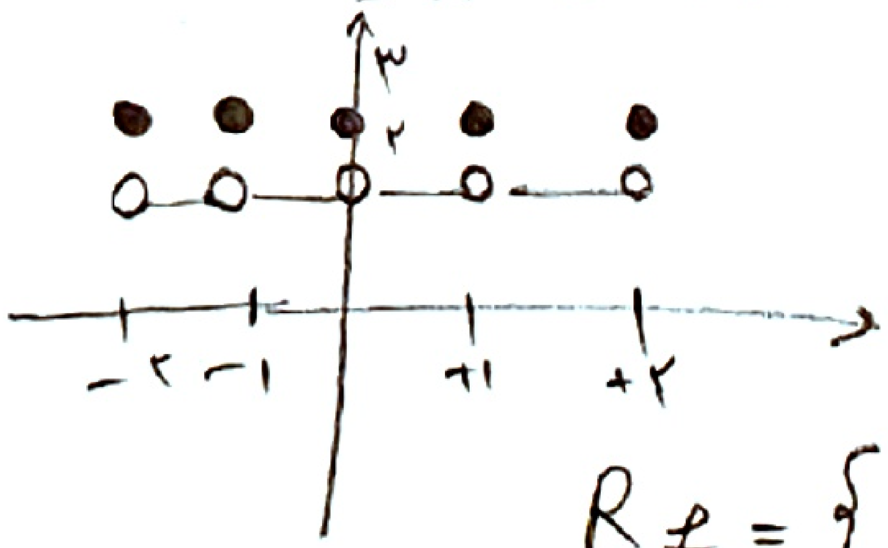
الف) $y=[x]+[3-x]$

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

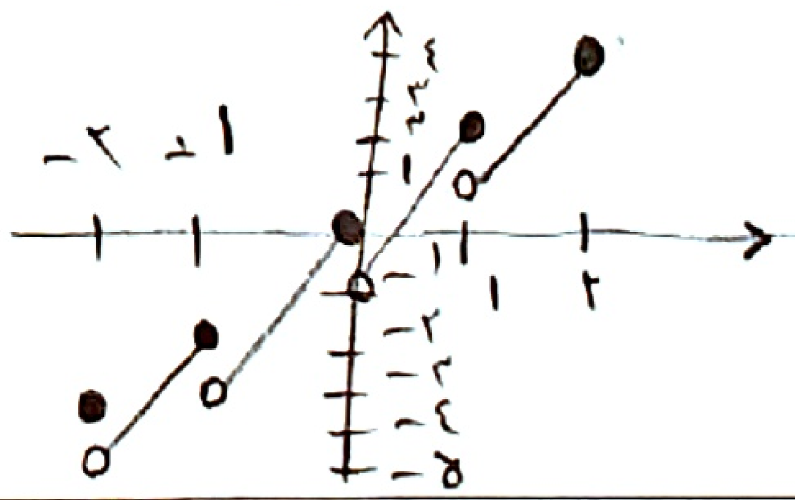


$R_f=\{3,2\}$

ب) $y=3x-[x]$

$f(-2)=-4 \quad f(-1)=-2 \quad f(0)=0$

$f(1)=2 \quad f(2)=4$



$R_f=(-5,+4]$

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الف) $y=\sin^2x-\sin x+1$

$\sin x_{min}=-1 \to y_{max}=+3$

$\sin x_{max}=1 \to y=+1$

$-\frac{b}{2a}=\frac12 \to y_{min}=\frac34$

$R_f=[\frac34,+3]$

ب) $y=\sin^4x+\sin^2x+1$

$\sin^2x_{min}=0 \to y_{min}=+1$

$\sin^2x_{max}=1 \to y_{max}=+3$

$-\frac{b}{2a}=-\frac12$ قق

$R_f=[+1,+3]$