نام و نام خانوادگی ......الناهستی اصفهانی............ پاسخنامه تشریحی تکلیف شماره ...۲۰... کلاس .یازدهم ریاضی A..........

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$$\frac{1}{x-1}=|x-1|$$

$x>1 \rightarrow x^2-2x+1=1 \Rightarrow x^2-2x=0 \begin{cases} x=0 & \text{غ ق ق} \\ \boxed{x=2} & \text{ق ق} \end{cases}$

$x=1 \rightarrow$ غ ق ق (مخرج صفر)

$x<1 \rightarrow -x^2+2x-1=1 \rightarrow -x^2+2x-2=0 \Rightarrow \Delta<0$ ریشه ندارد

معادله یک ریشه دارد ($x=2$)

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الف) $\left|\frac{2x-1}{x}\right|<2 \rightarrow -2<\frac{2x-1}{x}<2 \qquad \frac{2x-1}{x}<2 \Rightarrow x>0 \quad \text{I}$

$-2<\frac{2x-1}{x} \rightarrow \frac{4x-1}{x}>0 \qquad \begin{array}{ccccc} & 0 & & \frac{1}{4} & \\ \hline + & | & - & | & + \end{array} \Rightarrow x>\frac{1}{4}$ یا $x<0 \quad \text{II}$

$\text{I}\cap\text{II} \rightarrow \boxed{x\in\left(\frac{1}{4},+\infty\right)}$

ب) $\left|\frac{x-2}{2x+1}\right|>1$

$\rightarrow \frac{x-2}{2x+1}>1 \Rightarrow \frac{-x-3}{2x+1}>0 \Rightarrow \begin{array}{ccccc} & -3 & & -\frac{1}{2} & \\ \hline - & | & + & | & - \end{array} \rightarrow x\in\left(-3,-\frac{1}{2}\right)$

$\downarrow \frac{x-2}{2x+1}<-1 \Rightarrow \frac{3x-1}{2x+1}<0 \Rightarrow \begin{array}{ccccc} & -\frac{1}{2} & & \frac{1}{3} & \\ \hline + & | & - & | & + \end{array} \rightarrow x\in\left(-\frac{1}{2},\frac{1}{3}\right)$

$\rightarrow \boxed{x\in\left(-3,\frac{1}{3}\right)-\left\{-\frac{1}{2}\right\}}$

$x\in\left(-3,-\frac{1}{2}\right)\cup\left(-\frac{1}{2},\frac{1}{3}\right)$

۳

$x^2<|x+6| \longrightarrow x>-6 \rightarrow x^2-x-6<0 \Rightarrow (x-3)(x+2)<0 \qquad \begin{array}{ccccc} & -2 & & 3 & \\ \hline + & | & - & | & + \end{array} \Rightarrow x\in(-2,3)$

$\downarrow x<-6 \rightarrow x^2<-6-x \Rightarrow x^2+x+6<0 \rightarrow \Delta<0$

$x\in(-2,3) \qquad \frac{3-2}{2}=\frac{1}{2} \rightarrow -\frac{5}{2}<x-\frac{1}{2}<\frac{5}{2} \Rightarrow \left|x-\frac{1}{2}\right|<\frac{5}{2} \qquad \boxed{\alpha=\frac{1}{2}}$

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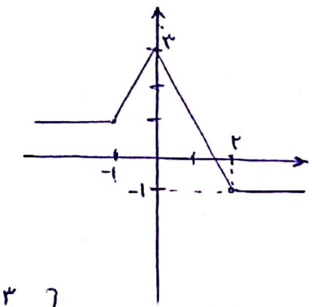
$$y=|x+1|-|2x|+|x-2|$$

-1		0		2	
$-x-1+2x-x+2$	$x+1+2x-x+2$		$x+1-2x-x+2$		$x+1-2x+x-2$
1	$2x+3$		$-2x+3$		-1
1		3		-1	



$\begin{rcases} y_{max}=3 \\ y_{min}=-1 \end{rcases} \quad 3+(-1)=\boxed{2}$

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$y=\left|\frac{1}{2}x\right|-2 \rightsquigarrow y=\left|\frac{1}{2}(x+4)\right|-2 \rightsquigarrow y=\left|\frac{1}{2}(x+4)\right|-1 \Rightarrow y=\left|\frac{1}{2}x+2\right|-1$

تقاطع دو نمودار $\rightarrow \left|\frac{1}{2}x\right|-2=\left|\frac{1}{2}x+2\right|-1 \xrightarrow{\times 2} |x|-4=|x+4|-2 \Rightarrow |x|-|x+4|=2$

$\begin{cases} x>0 \rightarrow \frac{1}{2}x=\frac{1}{2}x+3 & \text{غ ق ق} \\ -4<x<0 \rightarrow -\frac{1}{2}x-2=\frac{1}{2}x+1 \Rightarrow \boxed{x=-3} \\ x<-4 \rightarrow \frac{1}{2}x-2=-\frac{1}{2}x-3 & \text{غ ق ق} \end{cases}$

با طول $x=-3$ متقاطع هستند

$x=0 \rightarrow -2\neq 2-1$ غ ق ق $\qquad x=-4 \rightarrow 0\neq -1$ غ ق ق

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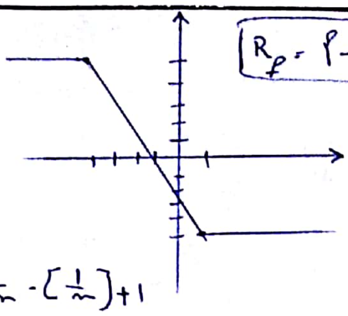
الف) $f(x)=[|1-x|-|x+4|]$

$x<-4$	$-4\le x<1$	$x\ge 1$
$1-x+x+4$ 5	$1-x-x-4$ $-2x-3$	$x-1-x-4$ -5



$\boxed{R_f=\{-5,-4,-3,-2,-1,0,1,2,3,4,5\}}$

ب) $f(x)=\frac{1}{x}-[\frac{x+1}{x}] \to f(x)=\frac{1}{x}-[\frac{1}{x}]+1$

$\frac{1}{x}-([\frac{1}{x}]+1) \to \frac{1}{x}-[\frac{1}{x}]-1$ $\begin{cases} \frac{1}{x}\in\mathbb{Z} \to f(x)=-1 \\ \frac{1}{x}\notin\mathbb{Z} \to -1<f(x)<0 \end{cases} \to \boxed{R_f=[-1,0)}$

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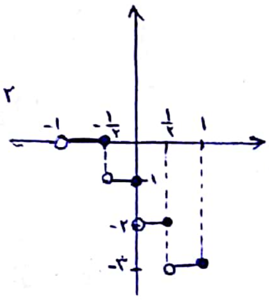
الف) $y=[-2x]-1$, $x\in(-1,1)$

$x\in(-1,-\frac{1}{2}] \to [-2x]-1=0$

$x\in(-\frac{1}{2},0] \to [-2x]-1=-1$

$x\in(0,\frac{1}{2}] \to [-2x]-1=-2$

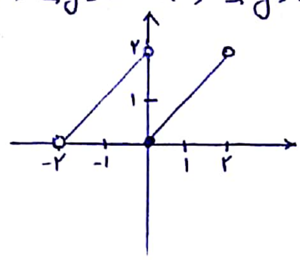
$x\in(\frac{1}{2},1) \to [-2x]-1=-3$



ب) $y=x-2[\frac{x}{2}]$, $x\in(-2,2)$

$x\in(-2,0) \to y=x-2(-1) \to y=x+2$

$x\in[0,2) \to y=x-2(0) \to y=x$



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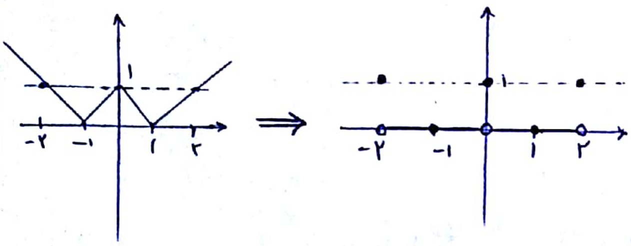
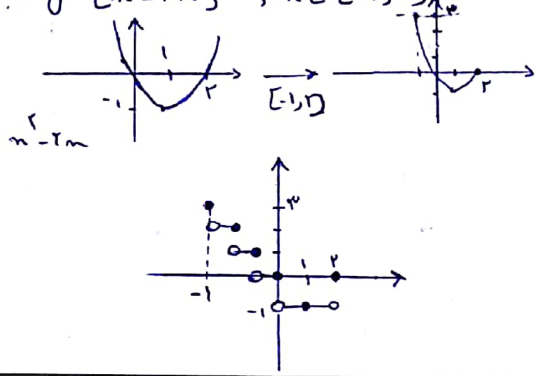
الف) $y=[||x|-1|]$, $x\in[-2,2]$

$x-1 \to |x|-1 \to ||x|-1| \to [||x|-1|]$



ب) $y=[x^2-2x]$, $x\in[-1,2]$



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$\begin{cases} a+[b]=4.2 \to a \text{ اعشار } =0.2 \Rightarrow a=[a]+0.2 \\ b-[a]=2.4 \to b \text{ اعشار } =0.4 \Rightarrow b=[b]+0.4 \end{cases}$

جمع. $\underbrace{a}_{[a]+0.2}+[b]+\underbrace{b}_{[b]+0.4}-[a]=6.6 \Rightarrow [a]+0.2+[b]+[b]+0.4-[a]=6.6 \to 2[b]=6 \Rightarrow [b]=3$

$b=3+0.4=3.4$ $\quad a=1.2$ $\quad a+b=3.4+1.2=4.6$

۱۰

$(1+\sqrt{2})^6+(1-\sqrt{2})^6=198 \to (1+\sqrt{2})^6=198-(1-\sqrt{2})^6$

$1-\sqrt{2}\simeq 0.4 \to 0<(1-\sqrt{2})^6<1$

$(1+\sqrt{2})^6=198-(1-\sqrt{2})^6=197.\ldots \Rightarrow [(1+\sqrt{2})^6]=197$