نام و نام خانوادگی ...نیانا اسپریار... پاسخنامه تشریحی تکلیف شماره ...... کلاس ....

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$\frac{1}{x-1}=|x-1| \to (x-1)|x-1|$

$x\geq 1 \to x^2-2x+1=\cancel{1}\ 0 \to x(x-2)=0 \to x=0$ ✗ , $x=2$ ✓

$x<1 \to -x^2+2x-1=1 \to -x^2+2x-2=0 \to x^2-2x+2=0 \to \Delta<0$

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$-2<\frac{2x-1}{x}<2 \Rightarrow \begin{cases} -\frac{1}{x}>-4 \to x>\frac{1}{4} \\ -\frac{1}{x}<0 \to x>0 \end{cases} \to x>\frac{1}{4}$

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$\left|\frac{2x-1}{x}\right|<2 \to -2<\underbrace{\frac{2x-1}{x}}_{2-\frac{1}{x}}<2 \to -2<2-\frac{1}{x}<2 \to -4<-\frac{1}{x}<0 \to 0<\frac{1}{x}<4$

$\left|\frac{x-2}{2x+1}\right|>1$

$\frac{x-2}{2x+1}>1 \to \frac{x-2-2x-1}{2x+1} \to \frac{-x-3}{2x+1}>0$; -3 , $-1/2$: $-\ |\ +\ |\ -$

$\frac{x-2}{2x+1}<-1 \to \frac{x-2+2x+1}{2x+1}=\frac{3x-1}{2x+1}<0$; $-1/2$, $+1/3$: $+\ |\ -\ |\ +$

$-3<x<\frac{1}{3}$

$(-3,\frac{1}{3})-\{-\frac{1}{2}\}$

۱,۵

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$\underbrace{x^2<|x+6|} \to |x-\alpha|<\beta \to \boxed{\alpha=1/2}$

$x+6>x^2 \to 0>x^2-x-6 \to (x-3)(x+2)$; -2 , 3 : $+\ |\ -\ |\ + \to (-2,3)$

$x+6<-x^2 \to x^2+x+6<0 \to \Delta<0$ ✗

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$y=|x+1|-|2x|+|x-2|$; $\max=3$, $\min=-1$

ریشه‌ها

$x=2 \to 3-4=-1$ min

$x=-1 \to -2+3 \to 1$

$x=0 \to 1+2=3$ max

$\to +2 \to$ مجموع

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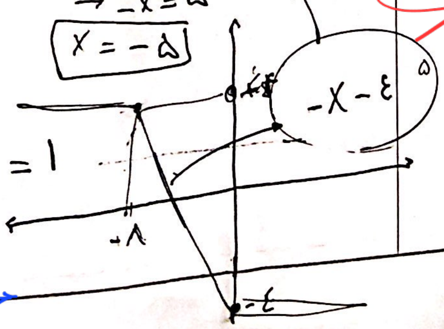
۵

$y=\left|\frac{1}{2}x\right|-2 \to \left|\frac{1}{2}x+4\right|-1$

$\to \left|\frac{1}{2}x\right|-2=\left|\frac{1}{2}x+4\right|-1 \to \left|\frac{1}{2}x\right|-\left|\frac{1}{2}x+4\right|=1$

$-x-4=1 \to -x=5$, $\boxed{x=-5}$



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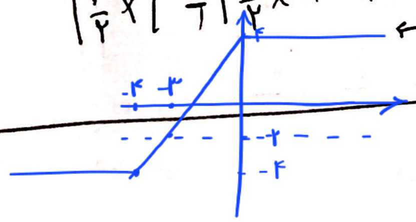
$y'=\left|\frac{1}{2}x+2\right|-1=y$

$|x+4|-|x|=-2$



$x=-3$

$1 \le x < 1/5$ ... $-2 \le x < -1$ ... $0 \le x < 1 \to -\frac{1}{2} \le ...$

$f(x) = [|1-x| - |x+4|]$

$x \geq 1 \to [(x-1)-(x+4)] \to \boxed{-5}$

$-4 \le x < 1 \to 1-x-x-4 - [-2x-3] \to [-2x]+3$

$x < -4 \to [(1-x)+4+x] = 5$

$f(x) = \frac{1}{x} - [1+\frac{1}{x}] \to \underbrace{\frac{1}{x}-[\frac{1}{x}]}_{[0,1)} + 1$

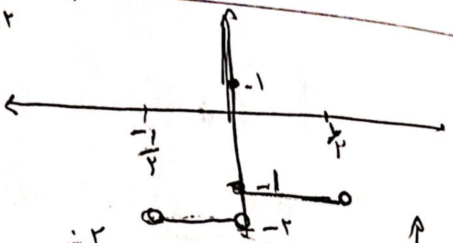
$R_f = [1,2)$

۱ ۶

$y = [-2x]-1$, $x \in (-1,1)$

$-1 < x < 0 \xrightarrow{\times -2} 0 < -2x < +2$

$0 \le x < 1$



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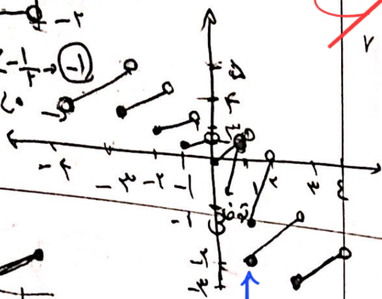
$y = x - 2[\frac{x}{2}]$ $\to$ $x \in (-3,3)$

$-2 < x \le -1 \xrightarrow{\div 2} -1 < x < -\frac{1}{2} \to -1$

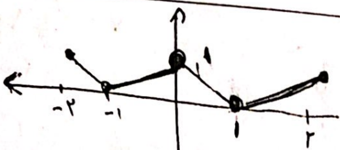
$-1 \le x < 0 \to -\frac{1}{2} \le x < 0$

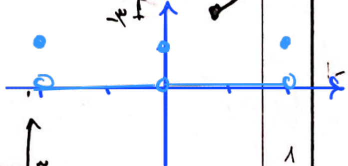
$0 \le x < 1 \to 0$

$1 \le x < 2 \to 0$



$y = [||x|-1|]$ $x \in [-2,2]$





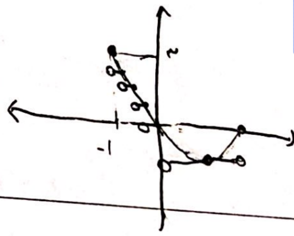
$y = [x^2 - 2x]$ $x \in [-1,2]$

$-1 \le x < 0$

$0 \le x < 1$

$1 \le x < 2$

$0 \leftarrow x = 2$



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$a + [b] = 4/2$

$b - [a] = 2/4$

$\to \begin{cases} [a] + [b] = 4 \\ [b] - [a] = 2 \end{cases} \xrightarrow{+} 2[b] = 6$

$\to \begin{cases} [b] = 3 \to 3/2 \\ [a] = 1 \to 1/4 \end{cases}$

$\to a + b = 3/2 + 1/4 = \boxed{4/6}$

۲ ۹

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

جواب $= (1+\sqrt{2})^6 \to [(1+\sqrt{2})^6] = \boxed{197}$

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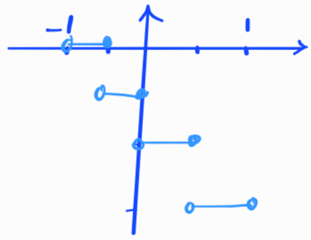
$(1+\sqrt{2})^2 = 1 + 2 + 2\sqrt{2}$

$(3+2\sqrt{2})^3 = 27 + 18\sqrt{8} + 27\sqrt{8} + 16\sqrt{8}$

الف۷)



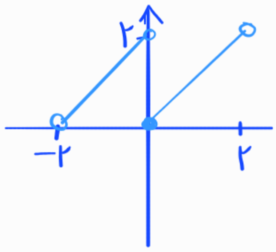
$0<x\leq\frac{1}{2}\to -2$

$\frac{1}{2}<x<1\to -3$

$-\frac{1}{2}<x\leq 0\to -1$

$-1<x\leq-\frac{1}{2}$

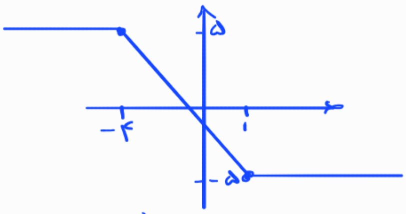
ب۷)



$0\leq x<2\to x$

$-2<x<0\to x+2$

الف۶)



$R_f=\{-5,-4,\dots,4,5\}$

ب۶)

$f(x)=\underbrace{\frac{1}{x}-\left[\frac{1}{x}\right]}_{0\leq\quad<1}-1\to R_f=[-1,0)$