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نام و نام خانوادگی ...... طاها محمدی ...... پاسخنامه تشریحی تکلیف شماره ...... کلاس ...... یازدهم تجربی ......

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$x \geq 1$: $\frac{1}{x-1} = |x-1| \to (x-1)^2 = 1 \to x^2 - 2x + 1 = 1$

$\to x(x-2) = 0 \to x = 0$ غ ق ق

$\to x = 2 \to$ یک ریشه

$x < 1$: $\frac{1}{x-1} = -x+1 \to -x^2 + 2x - 1 = 1 \to x^2 - 2x + 2 = 0$

$\Delta < 0$

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الف) $\left|\frac{2x-1}{x}\right| < 2 \to -2 < \frac{2x-1}{x} < 2$

① $\frac{2x-1}{x} + 2 > 0 \to \frac{4x-1}{x} > 0$

$(-\infty, 0) \cup (\frac{1}{4}, +\infty)$

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

جواب: $\boxed{(\frac{1}{4}, +\infty)}$

ب) $\left|\frac{x-2}{2x+1}\right| > 1 \to \frac{x-2}{2x+1} > 1 \to \frac{-x-3}{2x+1} > 0 \to (-3, -\frac{1}{2})$ ①

$\to \frac{x-2}{2x+1} < -1 \to \frac{3x-1}{2x+1} < 0 \to (-\frac{1}{2}, \frac{1}{3})$ ②

① ∪ ② $= x \in (-3, -\frac{1}{2}) \cup (-\frac{1}{2}, \frac{1}{3})$

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$x^2 - x - 6 < 0 \quad (x-3)(x+2) < 0 \to (-2, 3)$

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

$|x - \alpha| < \beta \to -\beta < x - \alpha < \beta \to \alpha - \beta < x < \alpha + \beta \to \begin{cases} \alpha - \beta = -2 \\ \alpha + \beta = 3 \end{cases} \to \boxed{\alpha = \frac{1}{2}}$

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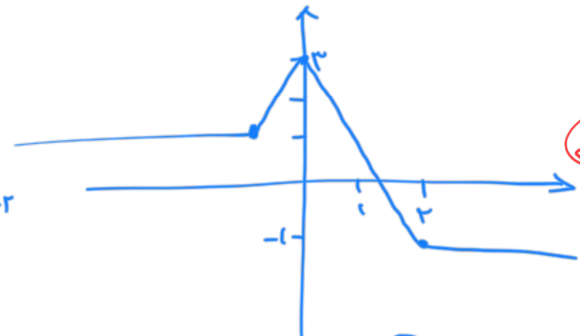
$y = \underbrace{|x+1|}_{-1} - \underbrace{|2x|}_{0} + \underbrace{|x-2|}_{2}$

$x < -1$	$-1 < x < 0$	$0 < x < 2$	$x > 2$
$-x-1+2x-x+2 = 1$	$x+1+2x-x+2 = 2x+3$	$x+1-2x-x+2 = -2x+3$	$x+1-2x+x-2 = -1$



$\min + \max = 3 - 1 = 2$

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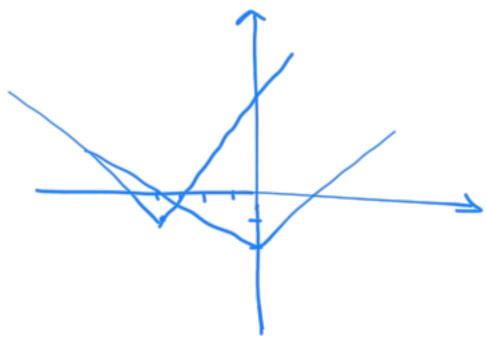
$y = |\frac{1}{2}x| - 2 \to |\underbrace{\frac{x}{2}}_{t}| - 2 = |\frac{x}{2} + 1| - 1 \to$

$|t| - |t+2| = 1 \to |t| = |t+2| + 1$

توان ۲: $\cancel{t^2} = 1 + \cancel{t^2} + 4 + 4t + 2t + 4 \to 6t = -9 \to t = -\frac{3}{2}$

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



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الف) $f(x)=[|1-x|-|x+4|]$

-4		1	
$1-x+4+x=5$	$1-x-x-4=-2x-3$	$x-1-x-4=-5$	

$\to -5\le |1-x|-|x+4|\le 5$

$\to R_f=[|1-x|-|x+4|]=$

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

ب) $f(x)=\frac{1}{x}-\left(\left[\frac{x+1}{x}\right]\right)=\underbrace{\frac{1}{x}-\left[\frac{1}{x}\right]}_{t}-1$

$\to 0\le t<1 \xrightarrow{-1} -1\le t-1<0$

$\to R_f=[-1,0)$

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

$-2<2x\le -1 \to 1\le -2x<2 \to [-2x]=1 \to y=0,\ -1<x\le -\frac{1}{2}$

$-1<2x\le 0 \to 0\le -2x<1 \to [-2x]=0 \to y=-1,\ -\frac{1}{2}<x\le 0$

$0<2x\le 1 \to -1\le -2x<0 \to [-2x]=-1 \to y=-2,\ 0<x\le \frac{1}{2}$

$1<2x\le 2 \to -2\le -2x<-1 \to [-2x]=-2 \to y=-3,\ \frac{1}{2}<x\le 1$

ب) $y=x-2\left[\frac{x}{2}\right] \quad -2<x<2 \to -1<\frac{x}{2}<1$

$-1\le\frac{x}{2}<0 \to \left[\frac{x}{2}\right]=-1 \to y=x+2,\ -2\le x<0$

x	y
-2	0
0	2

$0\le\frac{x}{2}<1 \to \left[\frac{x}{2}\right]=0 \to y=x,\ 0\le x<2$

x	y
0	0
2	2

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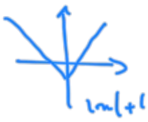
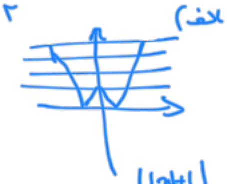
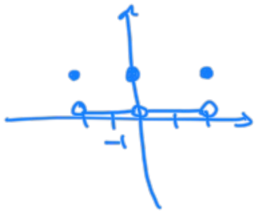
الف) $y=[||x|-1|] \quad -2\le x\le 2$



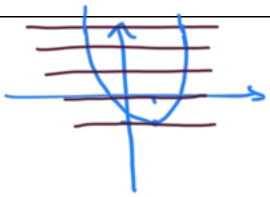
$|x|+1$

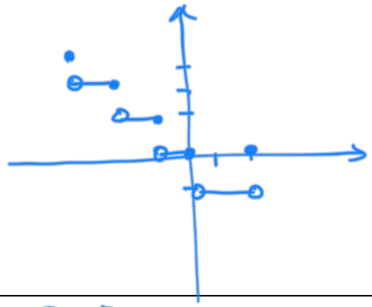


$||x|+1|$



ب) $[x^2-2x] \to \frac{-b}{2a}=1$, -1





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$a+\underbrace{[b]}_{y}=4.2 \qquad b-\underbrace{[a]}_{x}=2.4$

$\to a=x+0.2 \qquad b=y+0.4$

$\to x+0.2+y=4.2 \qquad y+0.4-x=2.4$

$\to \begin{cases} x+y=4 \\ x-y=2 \end{cases}$

$\to y=3,\ x=1$

$b=3.4$ و $a=1.2$

$\to a+b=4.6$

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

$\to [(1+\sqrt{2})^6]=[198-\underbrace{(1-\sqrt{2})^6}_{t<1}] \to [(1+\sqrt{2})^6]=197$

← به توان زوج رسیده و کوچکتر از یک شد

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