Date: Sub: به نام خدا تلماسعینی ۱۹,۷۵

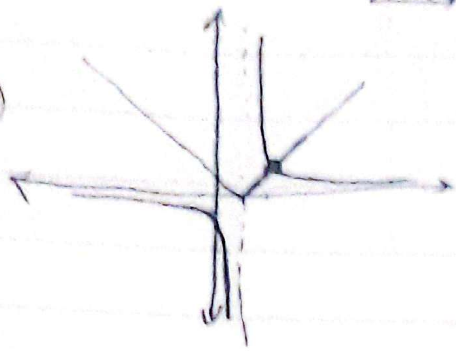
۱- (۱)

$x-1=t \longrightarrow \frac{1}{t}=|t| \xrightarrow{t>0} 1=t^2 \to t=1 \to x=2$

$\boxed{t<0,\ 1=-t^2}$ غ ق ق

یک ریشه

(۲)



یک ریشه

(۲)

۲-

الف) $\left|\frac{2x-1}{x}\right|<2$ $\quad -2<\frac{2x-1}{x}<2 \Rightarrow \left(\frac{1}{4},+\infty\right)$

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

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

ب) $\left|\frac{x-2}{2x+1}\right|>1$ $\quad \frac{x-2}{2x+1}>1$ $\quad \frac{\overbrace{x-2-2x-1}^{-x-3}}{2x+1}>0$ $\quad -3,\ -\frac{1}{2}$

$\frac{x-2}{2x+1}<-1$ $\quad \frac{\overbrace{x-2+2x+1}^{3x-1}}{2x+1}<0$ $\quad -\frac{1}{2},\ \frac{1}{3}$

مجموعه جواب ← $\left(-3,-\frac{1}{2}\right)\cup\left(-\frac{1}{2},\frac{1}{3}\right)$

۳-

$x^2<|x+6| \xrightarrow{x^2>0} x^2-x<6 \to \left(x-\frac{1}{2}\right)^2<6+\frac{1}{4}$

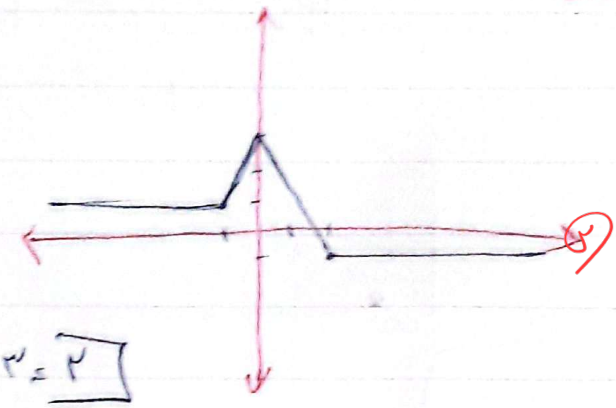
(۲)

$\left|x-\frac{1}{2}\right|<\frac{5}{2} \longrightarrow \boxed{\alpha=\frac{1}{2}}$

Elipon

$y = |x+1| - |x| + |x-2|$ —۴

-1		0		2
$\cancel{-x-1+x}-x+2-x$	$\cancel{x+1+x}+x+2-x$	$\cancel{x+1-x}+x-2-x$	$\cancel{x+1-x}+x-2$	
$+1$	$2x+3$	$-2x+3$	-1	



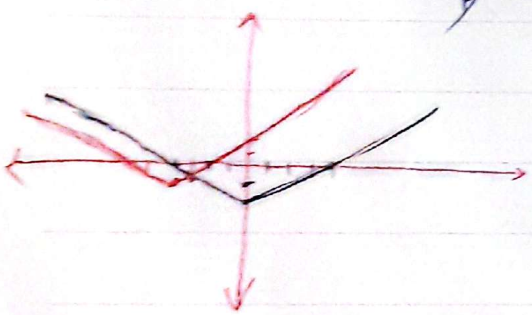
$Max = 3 \quad Min = -1 \Rightarrow -1+3 = \boxed{2}$

$\left|\frac{1}{2}(x+4)\right| - 2 + 1 \Rightarrow \left|\frac{1}{2}x+2\right| - 1$ —۵

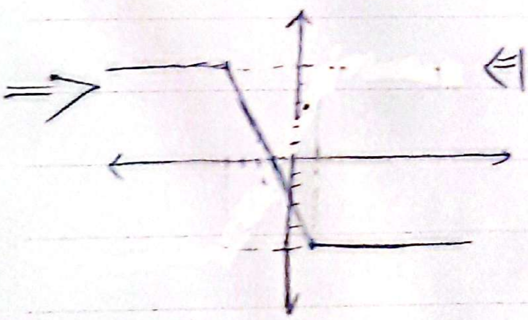
$\left|\frac{1}{2}x+2\right| - 1 = \left|\frac{1}{2}x\right| - 2$

-4		0	
$-\frac{1}{2}\cancel{x} - 2 + 1 = -\frac{1}{2}\cancel{x}$	$\frac{1}{2}x + 3 = -\frac{1}{2}x$ $x = -3$	$\frac{1}{2}\cancel{x} = \frac{1}{2}\cancel{x} + 3$	

$\boxed{x = -3}$



الف) $f(x) = \left[\,|1-x| - |x+4|\,\right] \Rightarrow \left[\,\underbrace{|x-1| - |x+4|}_{R=[-5,5]}\,\right] \Rightarrow R_f = \{\pm5, \pm4, \pm3, \pm2, \pm1, 0\}$ —۶



$\Leftarrow |x-1| - |x+4|$

ب) $f(x) = \frac{1}{x} - \left[\frac{x+1}{x}\right] = \frac{1}{x} - \left[\frac{1}{x}+1\right] = \underbrace{\frac{1}{x} - \left[\frac{1}{x}\right]}_{[0,1)} - 1 \Rightarrow R_f = [-1, 0)$

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الف) $y=[-2x]-1$

$-1 \leq x < -\frac{1}{2} \longrightarrow [-2x]=1 \xrightarrow{-1} 0$

$-\frac{1}{2} \leq x < 0 \longrightarrow [-2x]=0 \xrightarrow{-1} -1$

$0 \leq x < \frac{1}{2} \longrightarrow [-2x]=-1 \xrightarrow{-1} -2$

$\frac{1}{2} \leq x < 1 \longrightarrow [-2x]=-2 \xrightarrow{-1} -3$

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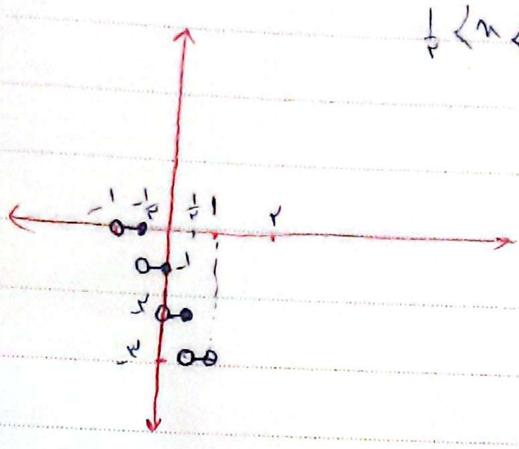
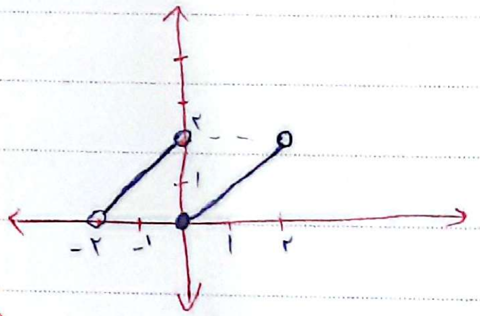


ب) $y=x-2\left[\frac{x}{2}\right]=2\left(\frac{x}{2}-\left[\frac{x}{2}\right]\right)$

$-2 \leq x < 0 \longrightarrow \left[\frac{x}{2}\right]=-1 \longrightarrow y=x+2$

$0 \leq x < 2 \longrightarrow \left[\frac{x}{2}\right]=0 \longrightarrow y=x$



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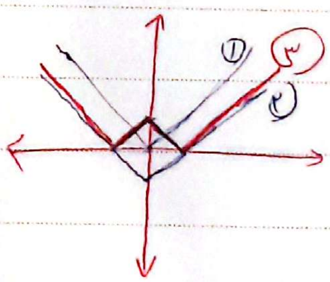
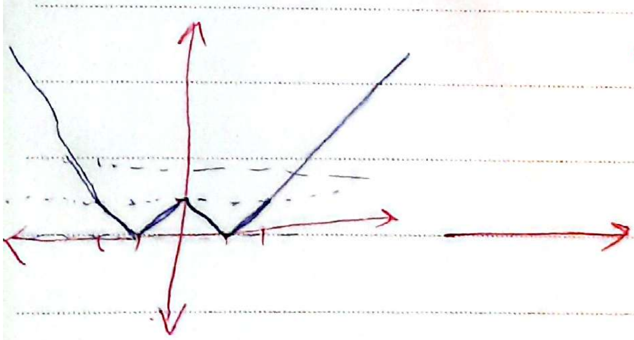
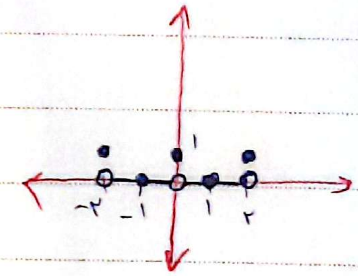
الف) $y=[|x|-1]$







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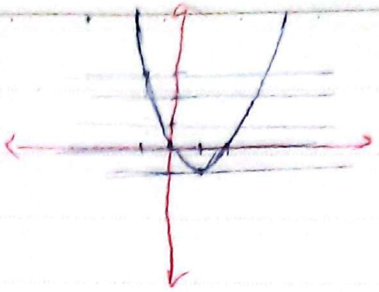
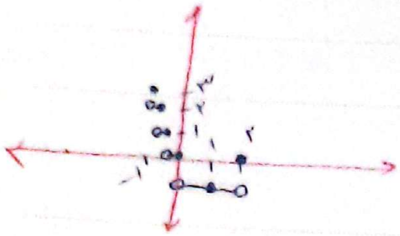
—) $y=[x^۲-۲x]=[x(x-۲)]$





—۹

$b-[a]=۲/۴ \longrightarrow b=۳/۴$

$a+[b]=۴/۲ \longrightarrow a=۱/۲$

$a+b=۴/۶$

۱/۷۵

$\underbrace{[b]-[a]}_{۲}+\underbrace{[a]+[b]}_{۴} \Rightarrow [b]=۳ \longrightarrow [a]=۱$

—۱۰

$(۱+\sqrt{۲})^۶=۱۹۸-(۱-\sqrt{۲})^۶ \Rightarrow ۱۹۷<(۱+\sqrt{۲})^۶<۱۹۸ \longrightarrow [(۱+\sqrt{۲})^۶]=\boxed{۱۹۷}$

۲

$۱-\sqrt{۲}\simeq-۰/۷ \longrightarrow ۰<(-۰/۷)^۶<۱$