نام و نام خانوادگی ......المینا علی نکارانی....... پاسخنامه تشریحی تکلیف شماره ...۲... کلاس ....یازدهم ریاضی B

۱

$\frac{1}{x-1} = |x-1| \Rightarrow$ ① $\frac{1}{x-1} = x-1 \Rightarrow 1 = x^2-2x+1$

$\Rightarrow x^2-2x=0 \Rightarrow x(x-2)=0 <$ $x=0$ غ ق ق ، $x=2$ ق ق

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

معادله یک ریشه دارد

۲

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

$-2<\frac{2x-1}{x}<2 \rightarrow$ ① $\frac{2x-1}{x}<2 \rightarrow \frac{2x-1-2x}{x}<0$

$\frac{-1}{x}<0 \Rightarrow x>0$

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

$\frac{4x-1}{x}>0 \rightarrow$ $\begin{array}{ccccc} & 0 & & \frac{1}{4} & \\ + & | & - & | & + \end{array}$ $\rightarrow x>\frac{1}{4}$ یا $x<0$

$\cap \; \boxed{x>\frac{1}{4}}$

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

$\frac{x-2}{2x+1}>1$ یا $\frac{x-2}{2x+1}<-1$

$\frac{-x-3}{2x+1}>0$ ، $\frac{3x-1}{2x+1}<0 \rightarrow$ $\begin{array}{ccccc} & -\frac{1}{2} & & \frac{1}{3} & \\ + & | & - & | & + \end{array}$

$\begin{array}{ccccc} & -3 & & -\frac{1}{2} & \\ - & | & + & | & - \end{array}$ $\rightarrow (-3,-\frac{1}{2}) \cup (-\frac{1}{2},\frac{1}{3})$

۳

$x^2<|x+4| \rightarrow x+4>x^2 \Rightarrow x^2-x-6<0 \rightarrow (x-3)(x+2)<0 \rightarrow (-2,3)$

یا $x+4<-x^2 \Rightarrow x^2+x+4<0 \rightarrow \Delta<0$ ریشه ندارد

$\Longrightarrow -2<x<3 \xrightarrow{\frac{3-2}{2}=\frac{1}{2}} -\frac{5}{2}<x-\frac{1}{2}<\frac{5}{2} \rightarrow |x-\frac{1}{2}|<\frac{5}{2}$

$\Downarrow$

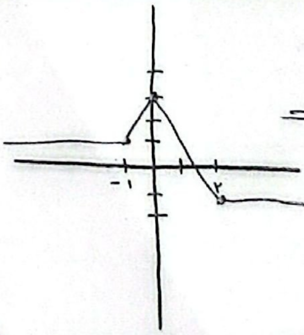
$\boxed{a=\frac{1}{2}}$

۴

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

S min , max ?

	-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	



$\Longrightarrow$ min $=-1$ ، max $=3$

$\boxed{\text{جمع} = 2}$

۵

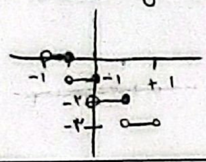
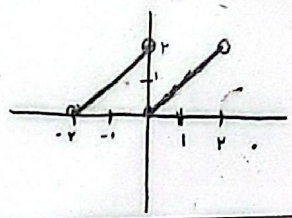
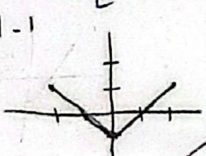
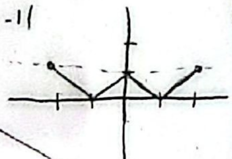
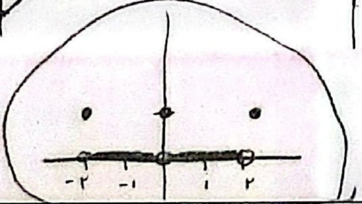
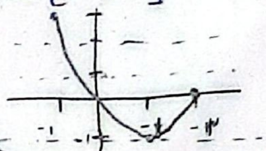
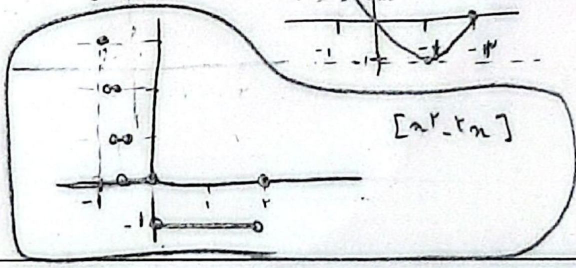
$y=|\frac{1}{2}x|-2 = \frac{1}{2}|x|-2 \xrightarrow[\text{x های منفی}]{\text{۴ واحد به طرف}} \frac{1}{2}|x+4|-2 \xrightarrow[\text{y های مثبت}]{\text{۱ واحد به طرف}} y=\frac{1}{2}|x+4|-1$

$\Rightarrow y=|\frac{1}{2}x+2|-1$

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

$\frac{1}{2}x = |\frac{1}{2}x+2|+1 \rightarrow \frac{1}{2}x-1 = |\frac{1}{2}x+2| <$ $\frac{1}{2}x-1=\frac{1}{2}x+2$ غ ق ق ، $\frac{1}{2}x-1=-\frac{1}{2}x-2 \rightarrow x=-1$ غ ق ق

$\frac{1}{2}x=-|\frac{1}{2}x+2|-1 \rightarrow |\frac{1}{2}x+2| = -\frac{1}{2}x-1 <$ $\frac{1}{2}x+2=-\frac{1}{2}x-1 \rightarrow \boxed{x=-3 \text{ ق ق}}$ ، $\frac{1}{2}x+2=\frac{1}{2}x+1$ غ ق ق

الف) $f(x) = [\lvert 1-x\rvert - \lvert x+4\rvert]$ $-4 \quad 1$ $1-x+x+4 = 5 \;\vert\; 1-x-x-4 = -2x-3 \;\vert\; x-1-x-4 = -5$ $R_f : \{5, 4, 3, \dots, -5\}$	ب) $f(x) = \frac{1}{x} - \left[\frac{x+1}{x}\right]$ $\frac{1}{x} - \left[1 + \frac{1}{x}\right] = \underbrace{\frac{1}{x} - \left[\frac{1}{x}\right]}_{0 \le (\;) < 1} - 1$ $R_f : [-1, 0)$	۶
الف) $y = [-2x] - 1 \quad x \in (-1, 1) \Rightarrow -2 < -2x < 2$ $-2 < -2x < -1 \xrightarrow{[-2x] = -2} y = -3, \; \frac{1}{2} < x < 1$ $-1 \le -2x < 0 \xrightarrow{[-2x] = -1} y = -2, \; 0 < x \le \frac{1}{2}$ $0 \le -2x < 1 \xrightarrow{[-2x] = 0} y = -1, \; -\frac{1}{2} < x \le 0$ $1 \le -2x < 2 \xrightarrow{[-2x] = 1} y = 0, \; -1 < x \le -\frac{1}{2}$ 	ب) $y = x - 2\left[\frac{x}{2}\right] \quad x \in (-2, 2) \Rightarrow -1 < \frac{x}{2} < +1$ $-1 < \frac{x}{2} < 0 \xrightarrow{[\frac{x}{2}] = -1} y = x + 2, \; -2 < x < 0$ $0 \le \frac{x}{2} < 1 \xrightarrow{[\frac{x}{2}] = 0} y = x, \; 0 \le x < 2$ 	۷
الف) $y = [\lvert\lvert x\rvert - 1\rvert] \quad x \in [-2, 2]$ $\lvert x\rvert - 1$  → $\lvert\lvert x\rvert - 1\rvert$  	ب) $y = [x^2 - 2x] \quad x \in [-1, 2]$ $x^2 - 2x : S\{1, -1$   $[x^2 - 2x]$	۸
$a + [b] = 4.2 \qquad b - [a] = 2.4 \qquad a + b$ $\underbrace{[a] + [b] = 4 \qquad [b] - [a] = 2}_{+}$ $[b] = 3, \; [a] = 1$ $b - 1 = 2.4 \rightarrow b = 3.4$ $a + 3 = 4.2 \rightarrow a = 1.2$ $\Rightarrow a + b = 3.4 + 1.2 = \boxed{4.6}$		۹
$(1+\sqrt{2})^6 + (1-\sqrt{2})^6 = 198 \qquad [(1+\sqrt{2})^6] = $ $(1+\sqrt{2})^6 = 198 - (1-\sqrt{2})^6$ $[(1+\sqrt{2})^6] = [198 - (1-\sqrt{2})^6] = [(1+\sqrt{2})^6] = 198 + [-(\underbrace{1-\sqrt{2}}_{-0.4})^6]$ $\xrightarrow[-1 < -(1-\sqrt{2})^6 < 0]{0 < (1-\sqrt{2})^6 < 1} [-(1-\sqrt{2})^6] = -1 \Rightarrow [(1+\sqrt{2})^6] = 198 - 1 = \boxed{197}$		۱۰