نام و نام خانوادگی: بهار مشهدیان — تکلیف ۲۰ — گروه یازدهم دختر A

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

① ریشه دارد

$x>1 \rightarrow \frac{1}{x-1}=x-1 \rightarrow 1=x^2-2x+1 \rightarrow x(x-2)=0 \rightarrow x=2$ ، $x=0$ غ ق ق X

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

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الف) $\left|\frac{2x-1}{x}\right|<2$

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

② $\frac{2x-1}{x}>-2 \rightarrow \frac{2x-1+2x}{x}>0 \rightarrow \frac{(4x-1)}{x}>0$ ، 0 ، $\frac{1}{4}$: $+ \mid - \mid +$

$① \cap ② \rightarrow (-\infty,0)\cup(\frac{1}{4},\infty)$

ب) $\left|\frac{x-2}{2x+1}\right|>1$

① $\frac{x-2}{2x+1}>1 \rightarrow \frac{x-2-2x-1}{2x+1}>0$ ، $-\frac{1}{2}$ ، -3 : $- \mid + \mid -$ ، $(-\frac{1}{2},-3)$

② $\frac{x-2}{2x+1}<-1 \rightarrow \frac{x-2+2x+1}{2x+1}<0$ ، $-\frac{1}{2}$ ، $+\frac{1}{3}$: $+ \mid - \mid +$ ، $(-\frac{1}{2},\frac{1}{3})$

$①\cup② \rightarrow (-\frac{1}{2},\frac{1}{3})$

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$x^2<|x+6|$

① $x^2<x+6 \rightarrow x^2-x-6<0 \rightarrow (x-3)(x+2)<0 \rightarrow (-2,3) \Longrightarrow \frac{3+(-2)}{2}=\frac{1}{2}$ ، $\frac{3+2}{2}=\frac{5}{2}$ $\rightarrow |x-\frac{1}{2}|<\frac{5}{2}$

$\beta=\frac{5}{2}$ ، $\alpha=\frac{1}{2}$

② $-x^2>x+6 \rightarrow x^2+x+6<0 \rightarrow \Delta<0$ X

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

$x\geq 2 \rightarrow x+1-2x+x-2 \rightarrow y=-1$

$0\leq x<2 \rightarrow x+1-2x-x+2 \rightarrow y=-2x+3 \xrightarrow{[0,2)} (-1,3]$

$-1\leq x<0 \rightarrow x+1+2x-x+2 \rightarrow y=2x+3 \xrightarrow{[-1,0)} [1,3)$

$x\leq -1 \rightarrow -x-1+2x-x+2 \rightarrow y=1$

بیشترین $=3$ ، کمترین $=-1$ $\}$ $3-1=2$

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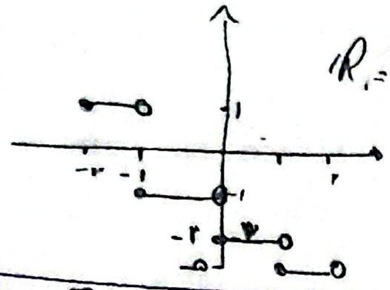
$y=|\frac{1}{2}x|-\frac{1}{2} \xrightarrow{①} y=|\frac{1}{2}x+4|-2 \xrightarrow{②} y=|\frac{1}{2}x+4|-2+1 \rightarrow y'=|\frac{1}{2}x+4|-1$

$y'=y \rightarrow |\frac{1}{2}x+4|-1=|\frac{1}{2}x|-2 \Rightarrow |\frac{1}{2}x+4|+1=|\frac{1}{2}x|$

$\frac{1}{2}x+4+1=\frac{1}{2}x \rightarrow 5=0$ X

$\frac{1}{2}x+4+1=-\frac{1}{2}x \rightarrow x+5=0 \rightarrow x=-5$

الف) $f(x) = [|1-x| + |x+4|]$



$R_f = \{x \mid x \in Z , -5 \le x \le 5\}$

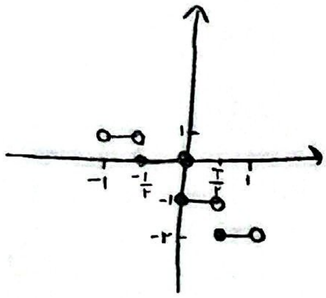
$R_f = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

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

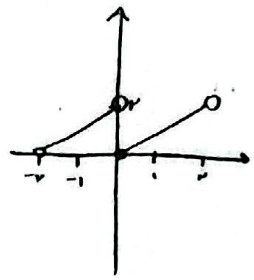
$y = \frac{1}{x} - [\frac{1}{x}] - 1$ 6

$R_f = [-1, 0)$

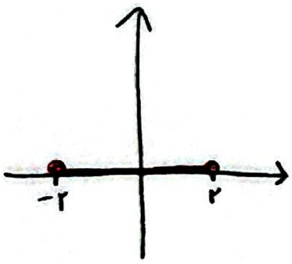
ب) $y = [-2x] - 1$ $x \in (-1, 1)$



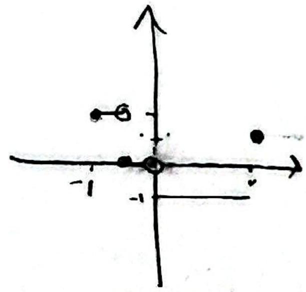
$y = x - 2[\frac{x}{2}]$ $x \in (-2, 2)$ ✓



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



$y = [x^2 - 2x]$ $x \in [-1, 2]$ 8



$a + [b] = 4.2 \rightarrow a = \ldots.2$ $\rightarrow a + [\overset{3}{\cancel{b}}] = 4.2 \rightarrow a = 1.2$

$b - [a] = 2.4 \rightarrow b = \ldots.4$ $b = 3.4$

$[a] + [b] = 4$

$+ [b] - [a] = 2$

$2[b] = 6 \rightarrow [b] = 3$

$a + b = 1.2 + 3.4 = 4.6$ 9

$(1+\sqrt{2})^6 = 198 - (1-\sqrt{2})^6 \xrightarrow{①} (1+\sqrt{2})^6 = 197, \ldots$ ②

$① \rightarrow 0 < 1-\sqrt{2} < 1 \xrightarrow{\text{توان } 6} 0 < (1-\sqrt{2})^6 < 1$ 10

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