ناهید دادخواه (راهنما) حسابان ۲ ۱۴۰۰ یازدهم گروه B

(۱)

$x-1=-\frac{1}{x-1} \rightarrow (x-1)^2=-1$ غ‌ق

$x-1=\frac{1}{x-1} \rightarrow (x-1)^2=1^2 \rightarrow |x-1|=1 \rightarrow x=2,0 \rightarrow$ ۲ جواب

(۲)

الف) $-2<\frac{2x-1}{x}<2 \rightarrow -2x<2x-1<2x \rightarrow -2x<2x-1$

$1<4x$

$\frac{1}{4}<x$

$x\in(-\frac{3}{4},\frac{1}{4})\cup(\frac{1}{4},\frac{1}{2})$

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

یا $\frac{x-2}{2x+1}<-1 \rightarrow \frac{3x-1}{2x+1}$

(۳)

$|x-\alpha|<\beta \rightarrow -\beta<\alpha-\alpha<\beta$

$x^2<x+6 \rightarrow x^2-x-6<0 \rightarrow -2<x<3$

$-x^2>x+6 \rightarrow x^2+x+6<0$ غ‌ق

	-2		3	
$+$		$-$		$+$

$3-\alpha=\beta$

$-2-\alpha=-\beta$

$1-2\alpha=0$

(۴)

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

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

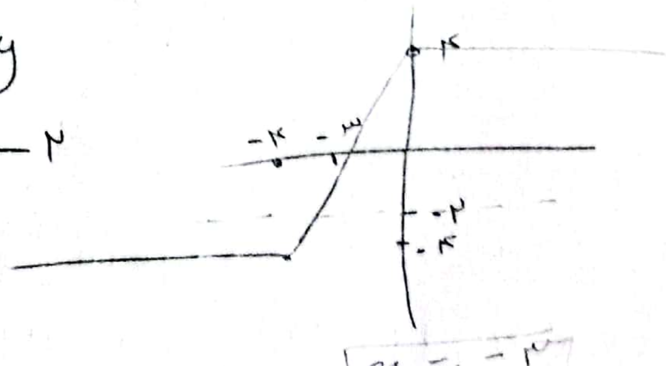
$x=2 \rightarrow 3-4=-1$ min

$\min+\max=2$

(۵)

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

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



$x=-3$

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الف) $[|1-x| - |x+3|]$

$y : x \in [-5, 5]$, $x \in Z \to$ -۵، -۴، -۳، -۲، -۱، ۰، ۱، ۲، ۳

ب) $B(x) = \frac{1}{x} - [\frac{x+1}{x}] = \frac{1}{x} - [\frac{1}{x}] - 1$, $0 \le \frac{1}{x} - [\frac{1}{x}] < 1$

$\frac{x+1}{x} = 1 + \frac{1}{x}$

$-1 \le \frac{1}{x} - [\frac{1}{x}] - 1 < 0$

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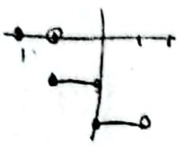
الف) $y = [-2x] - 1$, $x \in (-1, 1)$

$-\frac{1}{2} < x < 0 \xrightarrow{\times -2} 1 > -2x > 0 \xrightarrow{[\,]} [-2x] = 0$



$\to [-2x] - 1 = -1$

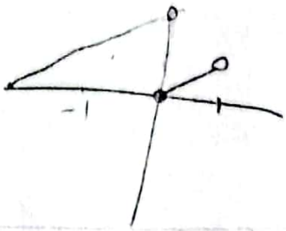
$0 \le x < \frac{1}{2} \xrightarrow{\times -2} 0 \ge -2x > -1 \xrightarrow{[\,]} [-2x] = -1$

$[-2x] - 1 = -2$

ب) $x - 2[\frac{x}{2}]$, $x \in (-2, 2)$

$-2 < x < 0 \to \frac{x}{2} < 0 \xrightarrow{[\,]} x + 2$

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



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الف) $[||x|-1|] \xrightarrow{-2<x<0} [|-x-1|] \to x \in [-2, -1) \to [x-1] = 1$

$x \in [-1, 0) \to [x+1] = 0$

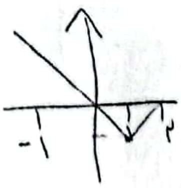
$0 \le x < 1 \to [1-x] \to 1$

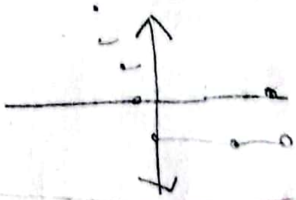
$1 \le x \le 2 \to 0, 1$

ب) $-1 < x < 0$

$0 \le x < 1$

$1 < x < 2$





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$\begin{cases} a + [b] = 4.2 \\ b - [a] = 2.4 \end{cases} \to [b] - [a] = 2$

$a + b + \underbrace{[b] - [a]}_{2} = 6.6 \to a + b = 4.6$

$(1+\sqrt{2})^5 + (1-\sqrt{2})^5 = 198 \rightarrow (1+\sqrt{2})^5 = 198 - (1-\sqrt{2})^5$

(1a)

$[(1+\sqrt{2})^5] = [198 - (1-\sqrt{2})^5]$

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