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نام و نام خانوادگی ....علیرضا مردانی.... پاسخنامه تشریحی تکلیف شماره ...۲... کلاس ....یازدهم ریاضی B....

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$|x-1| = \frac{1}{x-1} \rightarrow x-1 = \frac{1}{x-1} \rightarrow x^2-2x+1-1 \rightarrow x^2-2x=0 \rightarrow x=0 , x=2$

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

$x=0 \rightarrow |-1| = \frac{1}{0-1} \rightarrow 1=-1$ ✗ $\rightarrow 1 \neq -1$

$x=2 \rightarrow |2-1| = \frac{1}{2-1} \rightarrow 1=1$ ✓ $\rightarrow 1=1$

$\boxed{x=2}$

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

$\times x \rightarrow -2x < 2x-1 < 2x \rightarrow x \neq 0$

$-1<0 \rightarrow$ ✓

$-2x < 2x-1 \rightarrow 4x-1>0 \rightarrow x>\frac{1}{4}$ ②

$① \cup ② \rightarrow D_f = (\frac{1}{4}, +\infty)$

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

$\frac{x-2}{2x+1} - 1 > 0 \rightarrow \frac{x+3}{2x+1} < 0$ ①

$\frac{x-2}{2x+1} + 1 < 0 \rightarrow \frac{3x-1}{2x+1} < 0$ ②

$① \cup ② \rightarrow D_f = (-3, -\frac{1}{2}) \cup (-\frac{1}{2}, \frac{1}{3})$

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$x^2 < |x+6| \rightarrow x^2 - x - 6 < 0$ و $x^2 + x + 6 > 0 \rightarrow \Delta < 0 \rightarrow \mathbb{R}$

$x^2 - x - 6 = (x-3)(x+2) = 0 \rightarrow \quad D_f = (-2, 3)$

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

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

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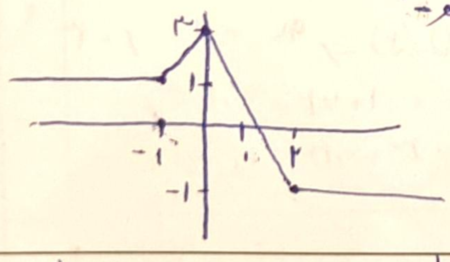
$y = |x+1| - |2x| + |x-2|$

-1		0		2	
$-x-1+2x+2$	$x+1+2x+2-x$	$x+1-2x+2-x$	$x+1-2x+x-2$
-1 ...	$2x+3$	$3-2x$	-1



$max_y = 3 , min_y = -1$

$max_y + min_y = 3-1 = 2$

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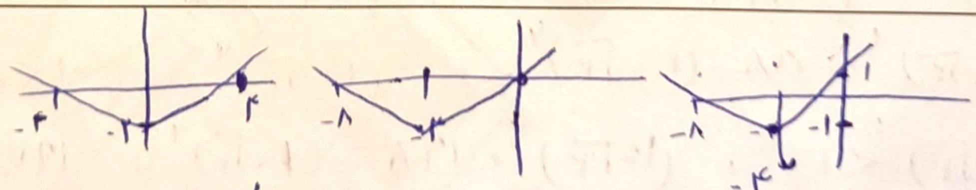
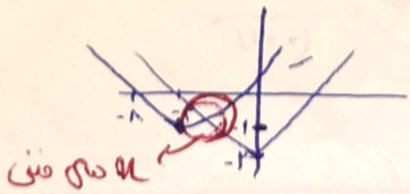
$y = |\frac{1}{2}x| - 2 \rightarrow$



$-\frac{1}{2}x - 2 \mid \frac{1}{2}x - 2$



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

$\boxed{x = -3}$

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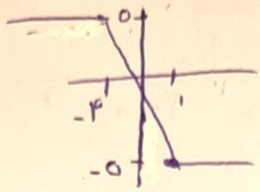
الف) $f(x) = [|1-x| - |x+4|] =$

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



$R_f = [-5, 5]$

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

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

$\frac{x+1}{x} = 1 + \frac{1}{x} \to \underbrace{\frac{1}{x} - \left[\frac{1}{x}\right]}_{[0,1)} - 1$

$[0,1) - 1 = [-1, 0)$

$R_f = [-1, 0)$

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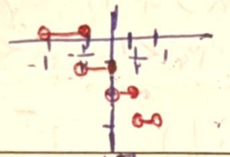
الف) $y = [-2x] - 1 \qquad x \in (-1, 1)$

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

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

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



اعداد در نمودار مشخص نیست

$y = -1, -2, -3$

$x = -1, -\frac{1}{2}, 0, \frac{1}{2}, 1$

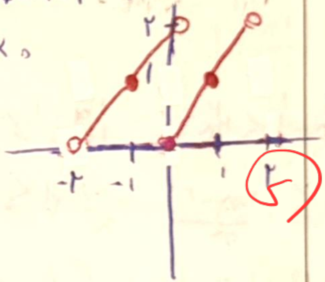
ب) $y = x - 2\left[\frac{x}{2}\right] \qquad x \in (-2, 2)$

$-2 \le \frac{x}{2} < -1 \to -4 \le x < -2$

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

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

$1 \le \frac{x}{2} < 2 \to 2 \le x < 4$



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

$|x| \qquad |x| - 1 \qquad \to ||x|-1|$

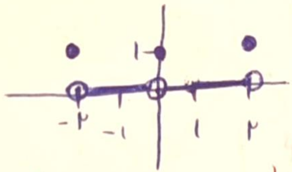
$-2 < x < -1 \to 2 \le |x| < 1 \to$

$-1 \le x < 0 \to 0 \le |x| \le 1$

$0 \le x < 1 \to 0 \le |x| < 1$

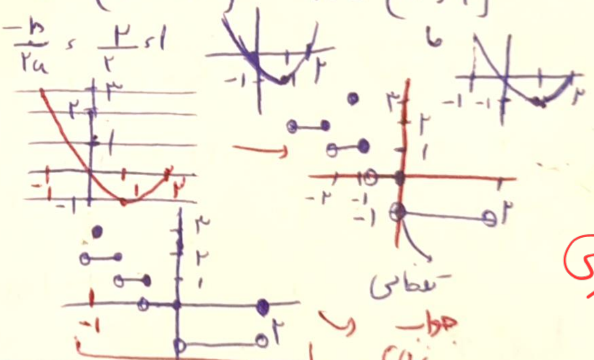
$1 \le x < 2 \qquad 1 \le |x| < 2$

$x = 2$



ب) $y = [x^2 - 2x] \qquad x \in [-1, 2]$

$-\frac{b}{2a} = \frac{2}{2} = 1$



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$a + [b] = 4.2 \qquad b - [a] = 2.4 \qquad \left.\begin{array}{l} a = x + 0.2 \\ b = y + 0.4 \end{array}\right\} \to$ جایگذاری $\quad x, y \in \mathbb{Z}$

$x + 0.2 + \underbrace{[y + 0.4]}_{\text{عدد صحیح}} = 4.2 \to x + y + 0.2 = 4.2 \to x + y = 4$ (1)

$y + 0.4 - [x + 0.2] = 2.4 \to y - x = 2$ (2)

(1),(2) $\Rightarrow x = 1 \quad y = 3$

$a = 1 + 0.2 = 1.2$

$b = 3 + 0.4 = 3.4$

$a + b = 1.2 + 3.4 = \boxed{4.6}$

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$(1+\sqrt{2})^6 + (1-\sqrt{2})^6 = 198 \qquad \underbrace{(1+\sqrt{2})^6}_{\text{جزء صحیح}}$

$(1+\sqrt{2})^6 = 198 - (1-\sqrt{2})^6 \to (1-\sqrt{2})^6 \to (-1 < 1-\sqrt{2} < 0)$

$0 < (1-\sqrt{2})^6 < 1 \to (1+\sqrt{2})^6 = 198 - \underbrace{(1-\sqrt{2})^6}_{(0,1)} = 197.\ldots$

$[197.\ldots] = 197$