

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۲... کلاس: از بهار ۱۳۹۵

$$\frac{1}{x-1} = |x-1| \rightarrow x > 1 \Rightarrow \frac{1}{x-1} = x-1 \rightarrow x^2 - 2x + 1 = x \rightarrow x(x-2) = 0 \rightarrow x = 0 \text{ یا } x = 2$$

(۲)

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

پس کلاً معادله ریشه مجزای ندارد است. (ارزش دارد)

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

(۱، ۵)

$$\frac{x^2 - 4x + 1}{x^2 + 4x + 1} > 1 \rightarrow x^2 - 4x + 1 > x^2 + 4x + 1 \rightarrow -8x < 0 \rightarrow x > 0$$

(ب)

$$x^2 + 4x - 9 < 0 \rightarrow (x-1)(x+9) < 0 \rightarrow x \in (-9, 1)$$

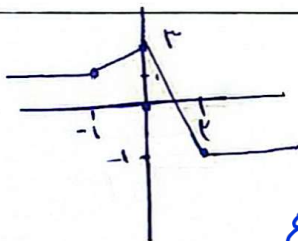
$$|x+2| > x^2 \rightarrow x+2 > x^2 \rightarrow x^2 - x - 2 < 0 \rightarrow (x-2)(x+1) < 0 \rightarrow x \in (-1, 2)$$

(۲)

$$\Rightarrow -2 < x < 2 \rightarrow \frac{2-2}{2} = \frac{1}{2} \rightarrow |x - \frac{1}{2}| < 2/2$$

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$$+1 \quad -1 \quad 2$$



$$y_{\max} = 2$$

$$y_{\min} = -1$$

$$\text{مجموع} = 2$$

(۱، ۷۵)

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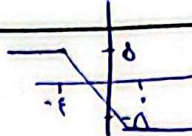
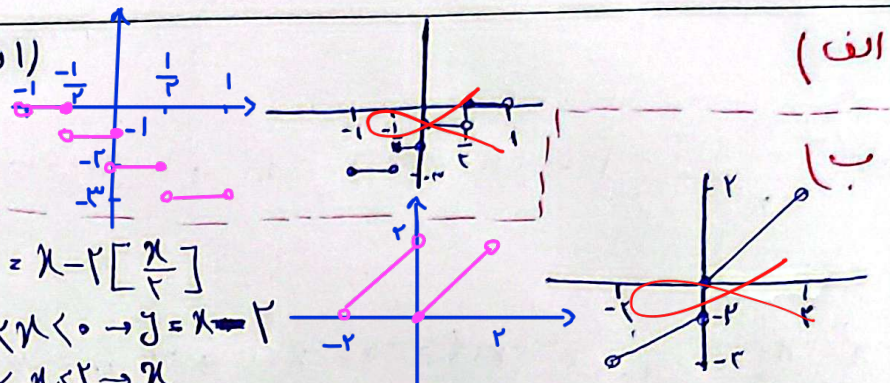
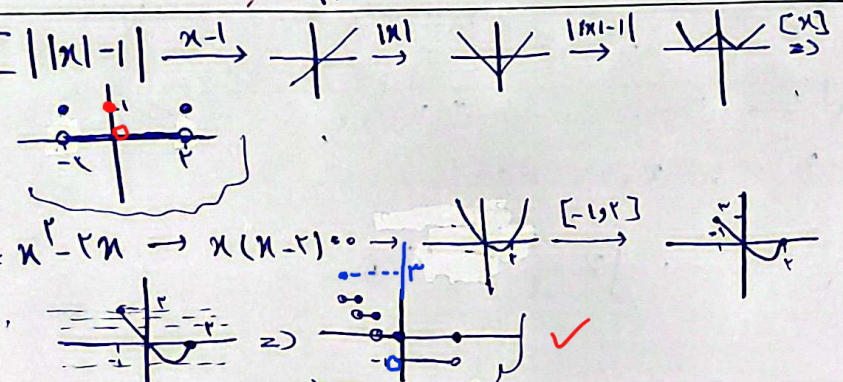
$$|\frac{1}{x}x| - 2 = |\frac{1}{x}(x+2)| - 1 \Rightarrow |\frac{1}{x}x| - |\frac{1}{x}(x+2)| = 1$$

$$\frac{-4}{3 \leq 0} \quad \frac{0}{1-x=3} \quad \frac{2}{x=2}$$

$$x = -3$$

(۲)

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$f(x) = [1-x - x+1] \Rightarrow \underbrace{ 1-x - x+1 }_{+} \rightarrow$  $\Rightarrow R[f] = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\} \subseteq R = \{x -5 \leq x \leq 5, x \in \mathbb{Z}\}$ ✓ $f(x) = \frac{1}{x} - \left\lfloor \frac{x+1}{x} \right\rfloor = \frac{1}{x} - \left\lfloor \frac{1}{x} \right\rfloor - 1 \Rightarrow R_f = \underbrace{\{x 0 < x < 1\}}_{\substack{0 < x < 1}} [-1, 0)$ ✓	الف) ٢ ٦ ب)
$g = [-x] - 1 \quad x \in (-1, 1)$ $-1 < x < -\frac{1}{2} \rightarrow g = -3$ $-\frac{1}{2} < x < 0 \rightarrow g = -2$ $0 < x < \frac{1}{2} \rightarrow g = -1$ $\frac{1}{2} < x < 1 \rightarrow g = 0$ $y = x - 2 \left\lfloor \frac{x}{\frac{1}{2}} \right\rfloor$ $-2 < x < 0 \rightarrow y = x + 2$ $0 < x < 2 \rightarrow y = x$ 	الف) ٥ ٧ ب)
$g = [x - 1 \xrightarrow{x-1} x \xrightarrow{ x } x \xrightarrow{ x -1} x-1 \xrightarrow{[x]} [x]$ $g = x^2 - 2x \rightarrow x(x-2) \dots \xrightarrow{[-1, 2]} [-1, 2]$ 	الف) ١, ٥ ٨ ب)
$a + [b] = 1/2 \Rightarrow [a] + [b] = 1 \oplus [b] = 1 \Rightarrow [b] = 1$ $b - [a] = 2/3 \Rightarrow [b] - [a] = 2 \Rightarrow [a] = 1$ $P_b = 1/2 \rightarrow b = 1 + 1/2 = 3/2$ ✓ $P_a = 1/2 \rightarrow a = 1 + 0/2 = 1/2$ ✓ $a + b = 2$ ✓	٢ ٩
$\underbrace{(4+\sqrt{2})^4 + (1-\sqrt{2})^4}_{(e, f)} = 191 \Rightarrow 191 < (4+\sqrt{2})^4 < 191 \Rightarrow [(4+\sqrt{2})^4] = 191$ ✓	٢ ١٠