

$$\frac{1}{x-1} = |x-1| \begin{cases} x > 1 & \frac{1}{x-1} = x-1 \Rightarrow 1 = x^2 + 1 - 2x \Rightarrow x^2 - 2x = 0 \\ & x < 1 & \frac{1}{x-1} = -x+1 \Rightarrow -x^2 + x + x - 1 = 1 \Rightarrow -x^2 + 2x - 2 = 0 \end{cases}$$

- معادله فقط 1 ریشه دارد: $x=2$

علا)

$$|\frac{x-1}{x}| < 2 \Rightarrow -2 < \frac{x-1}{x} < 2 \begin{cases} \frac{x-1}{x} < 2 \Rightarrow \frac{1}{x} > 0 \rightarrow x > 0 \text{ ①} \\ -2 < \frac{x-1}{x} \Rightarrow 0 < \frac{x-1}{x} \rightarrow (-\infty, 0) \cup (\frac{1}{2}, +\infty) \text{ ②} \end{cases}$$

$$\text{①} \cap \text{②} = [\frac{1}{2}, +\infty)$$

ب) $|\frac{x-2}{x+1}| > 1 \Rightarrow \begin{cases} \frac{x-2}{x+1} > 1 \Rightarrow \frac{x+3}{x+1} < 0 \rightarrow (-\infty, -\frac{1}{2}) \text{ ③} \\ \frac{x-2}{x+1} < -1 \Rightarrow \frac{x-1}{x+1} < 0 \rightarrow (-\frac{1}{2}, \frac{1}{2}) \text{ ④} \end{cases}$

$$\text{③} \cup \text{④} = (-\infty, -\frac{1}{2}) \cup (-\frac{1}{2}, \frac{1}{2})$$

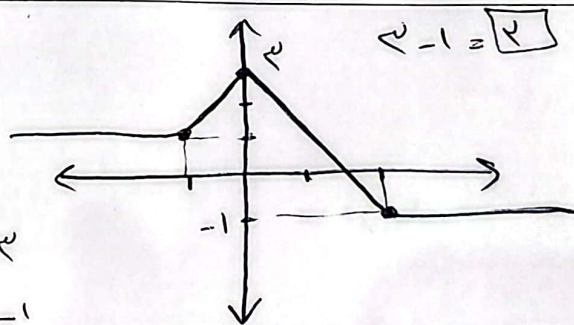
$$x^2 < x+2 \Rightarrow x^2 - x - 2 < 0 \rightarrow x < -\frac{2}{2} \quad \frac{-2}{1+4-4}$$

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

$$|x - \frac{1}{2}| < \frac{d}{2} \rightarrow \alpha = \frac{1}{2} \quad \beta = \frac{d}{2}$$

$$\begin{cases} x < -1 & -1 \\ -1 < x < 0 & -2x+3 \\ 0 \leq x \leq 2 & -2x+3 \\ x > 2 & 2x+3 \end{cases}$$

3 = شیب مقدار
-1 = شیب مقدار



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

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

$$\frac{1}{2}x - 1 \neq \frac{1}{2}x + 4 \Rightarrow -1 \neq 4 \quad \text{O.T.E}$$

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

الف)	$\begin{cases} x < -1 & [-\infty) \\ -1 \leq x < 1 & [-x-1] \\ x > 1 & (\infty) \end{cases}$ ب) $\frac{1}{x} - [1 + \frac{1}{x}] = y \Rightarrow \frac{1}{x} - [\frac{1}{x}] - 1 = y \Rightarrow 0 \leq \frac{1}{x} - [\frac{1}{x}] < 1 \Rightarrow -1 \leq \frac{1}{x} - [\frac{1}{x}] - 1 < 0 \Rightarrow [-1, 0)$	6
الف)	ب) $y = [-x] - 1$ $(-1, -\frac{1}{2})$ 9 $(-\frac{1}{2}, 0)$ -1 $(0, \frac{1}{2})$ -2 $(\frac{1}{2}, 1)$ -3 $(-2, 0)$ $x+2$ $(0, 2)$ x	7
الف)	ب) $y = x^2 - 2x$	8
ب) $b - [a] = 2, 4 \rightarrow 0, 4 = b$ قسم اول $\Rightarrow$ $a + [b] = 4, 2 \rightarrow 0, 2 = a$ قسم اول $\Rightarrow$ $\begin{cases} [b] - [a] = 2 \\ [a] + [b] = 4 \end{cases}$ $2[b] = 6 \Rightarrow [b] = 3$ $[a] = 1$ $\begin{cases} a = 1, 2 \\ b = 2, 3 \end{cases} \xrightarrow{+} \{3, 4\}$	9	9
الف)	ب) $(1 + \sqrt{x})^2 = 198 - (1 - \sqrt{x})^2 = 198 - \{(1 - \sqrt{x})^2\}^2 = 198 - \{4 - 4\sqrt{x}\}^2 = 198 - [16 - 32\sqrt{x} + 4x] = 198 - 16 + 32\sqrt{x} - 4x = 182 + 32\sqrt{x} - 4x$ $198 - [16 - 32\sqrt{x} + 4x] = 182 + 32\sqrt{x} - 4x$ $198 - 16 + 32\sqrt{x} - 4x = 182 + 32\sqrt{x} - 4x \Rightarrow [182, 198] = [182, 198]$	10