

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

$$\rightarrow \frac{1}{x-1} = x-1 \quad \frac{1-x^2+x}{x-1} = -1 \quad x^2-2x=0 \quad x(x-2)=0 \quad \boxed{x=0} \quad \boxed{x=2}$$

$$\rightarrow \frac{1}{x-1} = -x+1 \quad \frac{1+x^2-x}{x-1} = 1 \quad x^2+2x+2=0 \quad \Delta = (-2)^2 - 4 \times 1 \times 2 = -4 \quad \Delta < 0 \quad \times$$

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$$\text{الف) } \left| \frac{x-1}{x} \right| < 2 \quad -2 < \frac{x-1}{x} < 2 \rightarrow -2 < \frac{x-1}{x} < 2 \quad x > 1 \quad x > \frac{1}{x} \\ \rightarrow \frac{x-1}{x} < 2 \quad 1 > 0 \quad \rightarrow \boxed{\left(\frac{1}{x}, +\infty \right)}$$

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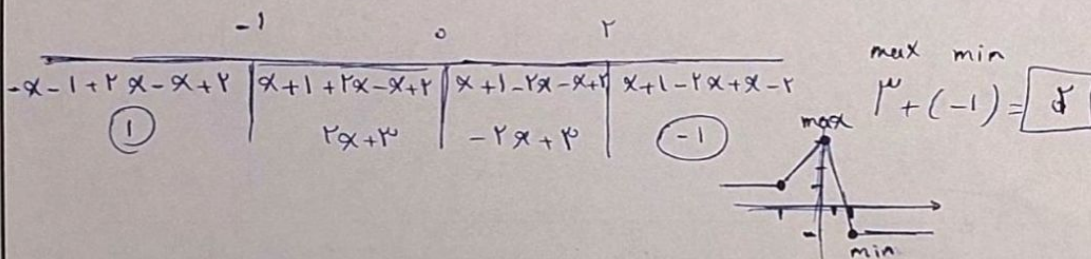
$$\text{ب) } \left| \frac{x-2}{2x+1} \right| > 1 \rightarrow \textcircled{1} \frac{x-2}{2x+1} > 1 \quad x < -3 \\ \rightarrow \frac{x-2}{2x+1} < -1 \quad 3x < 1 \quad x < \frac{1}{3} \\ \rightarrow \frac{x-2}{2x+1} < -1 \quad x < -\frac{1}{3} \quad \rightarrow \boxed{\left(-\infty, -\frac{1}{3} \right) \cup \left(\frac{1}{3}, +\infty \right)}$$

$$|x+y| > x^2 \rightarrow x+y > x^2 \quad x^2-x-y < 0 \quad \frac{-2}{-2} \quad \frac{3}{-2} \quad (-2, 3) \\ \rightarrow x+y < -x^2 \quad x^2+x+y < 0 \quad \Delta < 0 \quad \times$$

$$|x-\alpha| < \beta \quad -\beta < x-\alpha < \beta \quad \alpha-\beta < x < \alpha+\beta \quad (-2, 3) \quad \alpha-\beta = -2 \\ \alpha+\beta = 3 \\ \begin{cases} \alpha-\beta = -2 \\ \alpha+\beta = 3 \end{cases} \rightarrow 2\alpha = 1 \quad \boxed{\alpha = \frac{1}{2}} \quad \boxed{\beta = \frac{5}{2}} \quad |x-\frac{1}{2}| < \frac{5}{2}$$

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$$|x+1| - |2x| + |x-2|$$



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$$y = \left| \frac{1}{x} \right| - 2 \xrightarrow{\text{تأخیر}} \left| \frac{x+2}{x} \right| - 2 \xrightarrow{\text{بالاتر}} \left| \frac{x+2}{x} \right| - 1$$

$$\text{متناهی} \rightarrow \left| \frac{1}{x} \right| - 2 = \left| \frac{x+2}{x} \right| - 1 \quad \left| \frac{1}{x} \right| - 1 = \left| \frac{x+2}{x} \right|$$

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

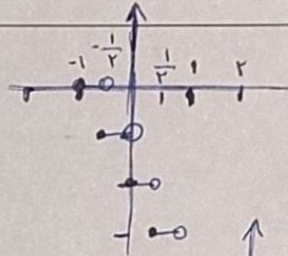
$$\rightarrow \frac{x}{x} + 1 = -\frac{x}{x} + 2 \quad \frac{2x}{x} \neq 1 = 2 \quad \boxed{x = -3}$$

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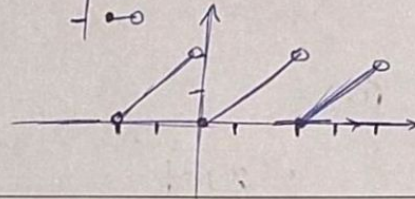
الف) $f(x) = [1-x] - [x+1] \rightarrow$ دیکھو $x=1 \rightarrow |1-1| - |1+1| = -2$
 $x=-1 \rightarrow |1+1| - |-1+1| = 2$
 $[-\infty, \infty] \xrightarrow{\text{برائیت}} [-\infty, -2, -1, 0, 1, 2, \infty]$

ب) $f(x) = \frac{1}{x} - \left[\frac{x+1}{x} \right] \rightarrow \frac{1}{x} - \left[1 + \frac{1}{x} \right] \rightarrow \frac{1}{x} - \left[\frac{1}{x} \right] - 1$
 $\frac{1}{x} = + \rightarrow \left[\frac{1}{x} \right] + 1$
 $+ - [+] \rightarrow 0 \leq + - [+] < 1 \rightarrow [-1, 0)$

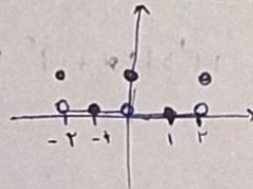
الف) $y = [-2x] - 1 \quad x \in (-1, 1)$



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

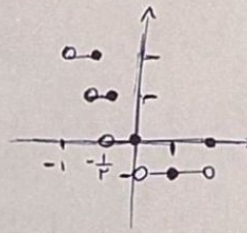


الف) $y = [11x - 11] \quad x \in [-2, 2]$



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

$x(x-2) \rightarrow x=0$
 $\rightarrow x=2$



$a + [b] = 4, 2$

نسبت اعشاری $\rightarrow a = 0, 2, [a] + [b] = 4$

$b - [a] = 2, 4$

$\rightarrow a + b = 0, 2 + 2, 4 = [2, 4]$

نسبت اعشاری $\rightarrow b = 2, 4 \quad [b] - [a] = 2$

$(1+\sqrt{2})^4 + (1-\sqrt{2})^4 = 191 \quad (1+\sqrt{2})^4 = 191 - (1-\sqrt{2})^4$
 $0 < (1-\sqrt{2})^4 < 1$

$\rightarrow 191 < (1+\sqrt{2})^4 < 192 \Rightarrow [191]$