

$$\frac{1}{n-1} = |n-1| \Rightarrow n-1 > 0 \quad n > 1$$

چند ریشه؟

$$\frac{1}{n-1} = n-1 \quad 1 = (n-1)^2 \quad n^2 + 1 - 2n = 1 \quad n^2 - 2n = 0$$

$$n(n-2) = 0$$

$$n=0 \rightarrow \alpha$$

$$n=2$$

یاب

$$n=0 \rightarrow \frac{1}{-1} = |0-1| \alpha$$

$$n=2 \rightarrow \frac{1}{1} = |2-1| \checkmark$$

الف) $\left| \frac{2n-1}{n} \right| < 2 \quad \frac{2n-1}{n} < 2 \quad \frac{2n-1}{n} - 2 < 0 \Rightarrow \frac{2n-1-2n}{n} < 0 \Rightarrow \frac{-1}{n} < 0 \Rightarrow n > 0$

$\frac{2n-1}{n} > -2 \quad \frac{2n-1}{n} > -2 \Rightarrow \frac{2n-1+2n}{n} > 0 \Rightarrow \frac{4n-1}{n} > 0 \Rightarrow (-\infty, 0) \cup \left[\frac{1}{4}, +\infty\right)$

ب) $\left| \frac{n-2}{2n+1} \right| > 1 \quad \frac{n-2}{2n+1} > 1 \Rightarrow \frac{n-2-2n-1}{2n+1} > 0 \Rightarrow \frac{-n-3}{2n+1} > 0$

$\frac{n-2}{2n+1} < -1 \Rightarrow \frac{n-2+2n+1}{2n+1} < 0 \Rightarrow \frac{3n-1}{2n+1} < 0$

جواب: $(-\infty, -\frac{1}{2}) \cup \left(\frac{1}{3}, +\infty\right)$

$$n^2 < |n+4|$$

مجموعه جواب به صورت $\alpha < |n-\alpha| < \beta$ ؟

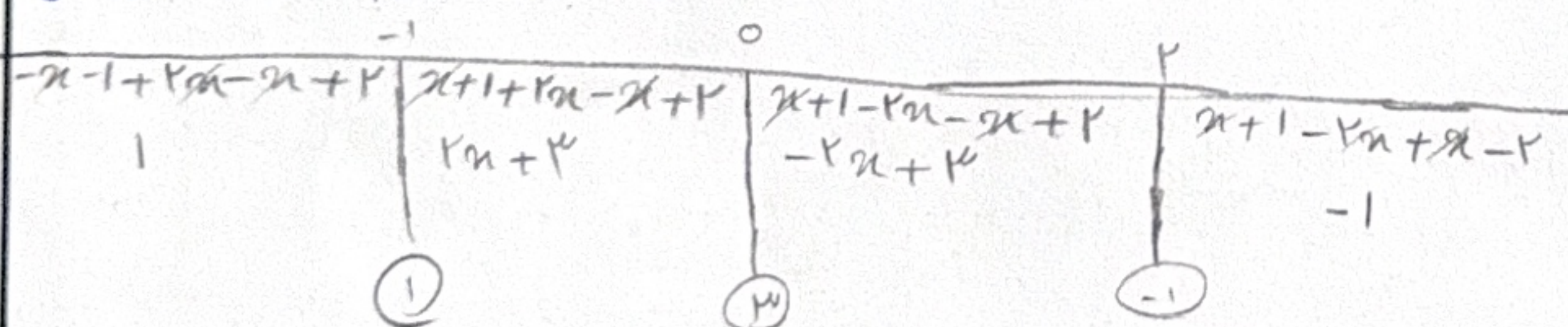
$$n+4 > n^2 \quad n^2 - n - 4 < 0 \quad (n-3)(n+2) < 0 \quad \frac{-2}{-1} \quad \frac{3}{1} \quad (-2, 3)$$

$$\left| n - \frac{1}{2} \right| < 3 - \frac{1}{2} \Rightarrow \left| n - \frac{1}{2} \right| < \frac{5}{2} \Rightarrow \alpha = \frac{1}{2}, \beta = \frac{5}{2}$$

$$n^2 + n + 4 < 0 \Rightarrow \Delta < 0 \Rightarrow \mathbb{R}$$

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

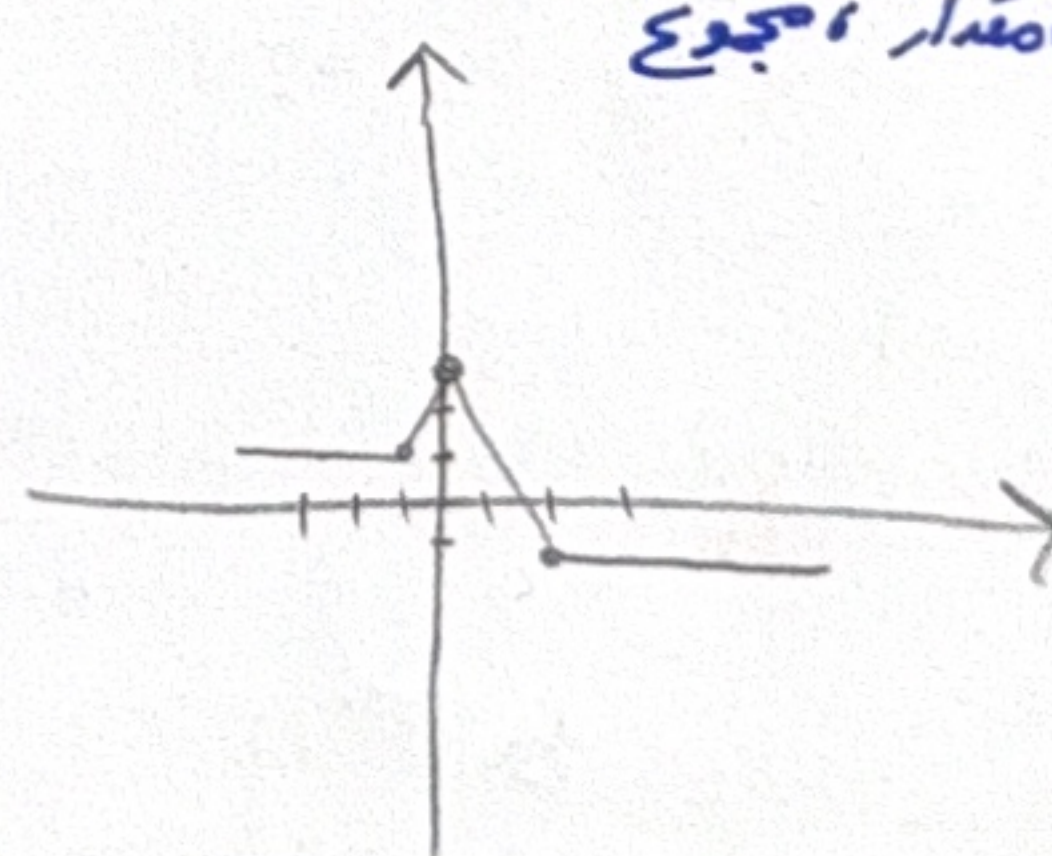
بیشترین مقدار و مجموع



$$\max = 3$$

$$3-1 = 2$$

$$\min = -1$$



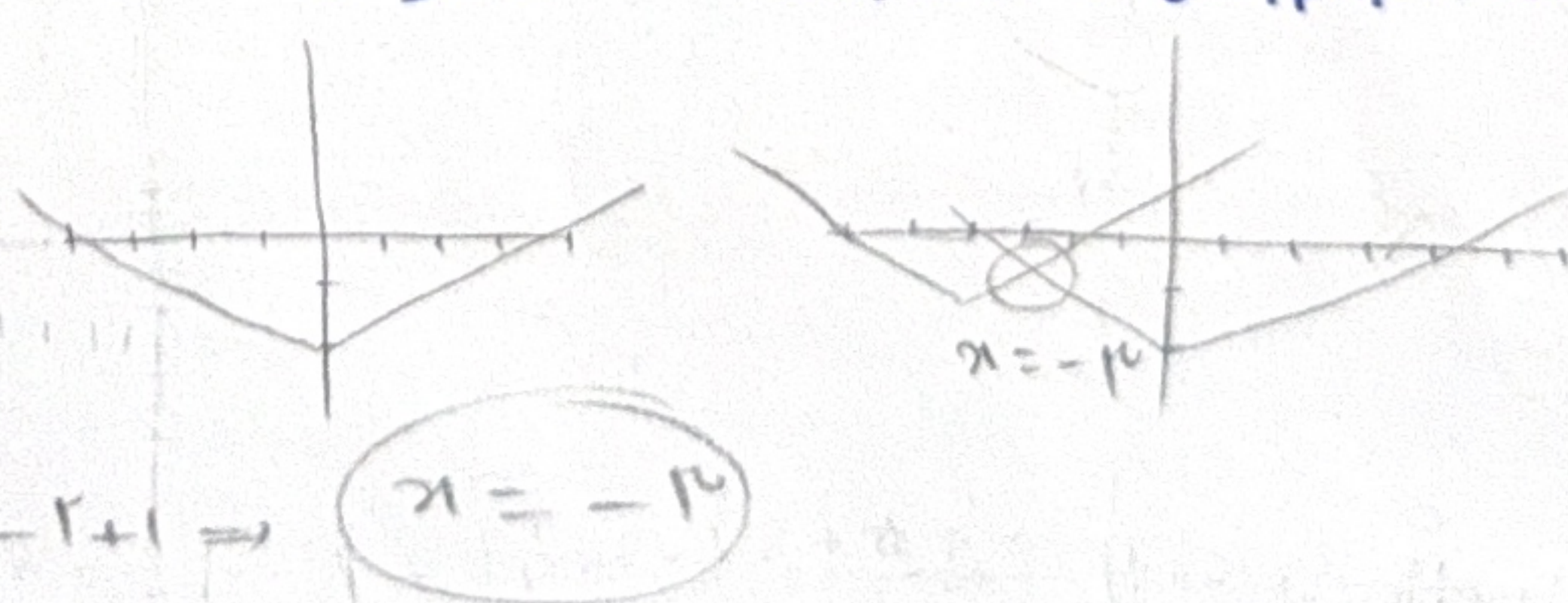
نمودار تابع $y = \left| \frac{1}{2}n \right| - 2$ را با واحد به طرف های منفی و مثبت استقلال صدیم. نمودار جدید و نمودار اولیه با یکدیگر طول متقاطع؟

$$\left| \frac{1}{2}n \right| + 2 - 1 \rightarrow \left| \frac{n}{2} + 2 \right| - 1$$

$$\left| \frac{n}{2} + 2 \right| - 1 = \left| \frac{1}{2}n \right| - 2$$

$$\frac{n}{2} + 2 - 1 = \frac{n}{2} - 2 \rightarrow \alpha$$

$$\frac{n}{2} + 2 - 1 = \frac{1}{2}n - 2 \Rightarrow n = -2 - 2 + 1 = -3$$



$$n = -3$$

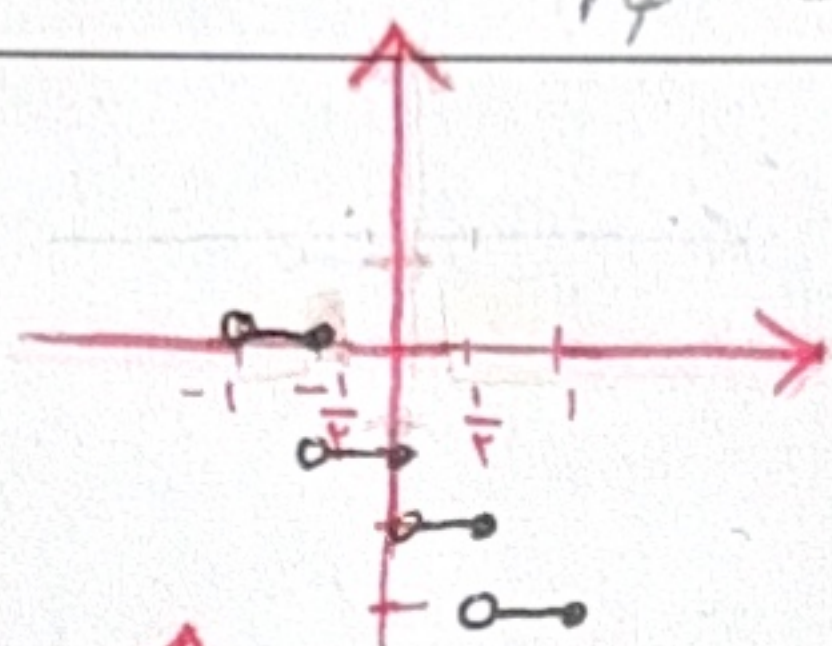
الف) $f(x) = [1 - |x| - |x+4|]$
 $|x| - |x+4|$
 $\rightarrow R_f = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

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

$\frac{1}{x} - [1 + \frac{1}{x}]$ $f(x) = \frac{1}{x} - 1 - [\frac{1}{x}] \rightarrow \frac{1}{x} - [\frac{1}{x}] - 1$
 $\frac{1}{x} - [\frac{1}{x}] + 1$
 $[0, 1)$

$R_f = [-1, 0)$

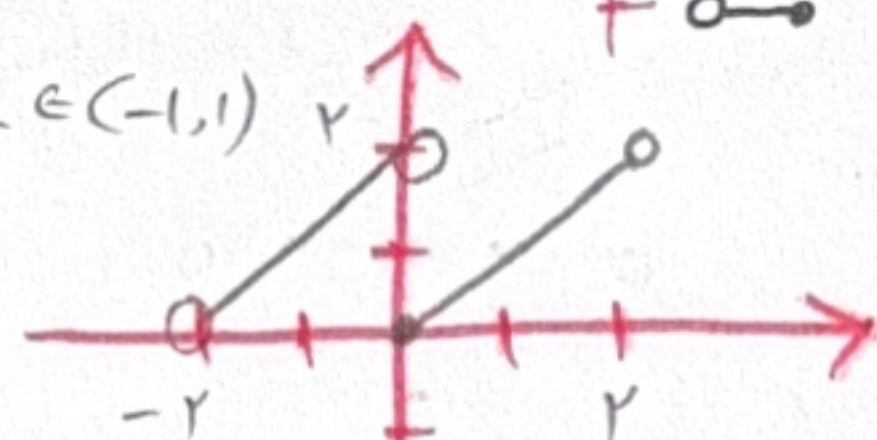
الف) $y = [-2x] - 1$ $x \in (-1, 1)$
 $-2 < -2x < -1 \rightarrow y = -2$
 $-1 < -2x < 0 \rightarrow y = -1$
 $0 < -2x < 1 \rightarrow y = 0$
 $1 < -2x < 2 \rightarrow y = 1$



ب) $y = x - r[\frac{x}{r}]$

$x \in (-2, 2)$ $\frac{x}{r} \in (-1, 1)$

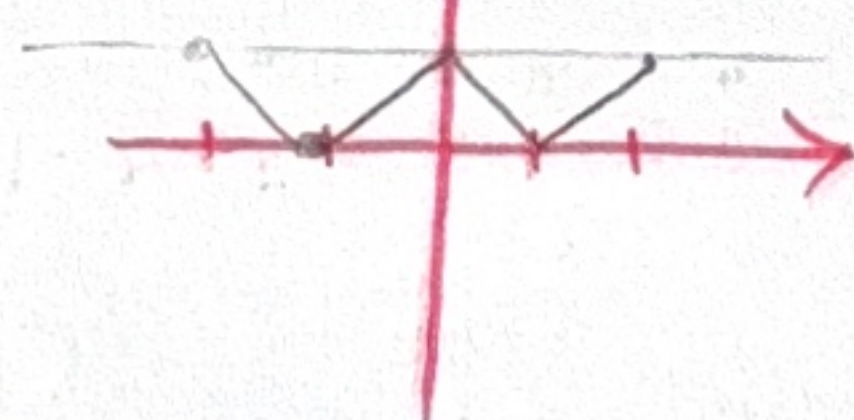
$-2 < x < 0 \rightarrow x+2$
 $0 < x < 2 \rightarrow x$



الف) $y = [|x| - 1]$

$x \in [-2, 2]$

$-2 \leq x < -1 \rightarrow 1$
 $-1 \leq x < 0 \rightarrow 0$
 $0 \leq x < 1 \rightarrow 1$
 $1 \leq x < 2 \rightarrow 0$

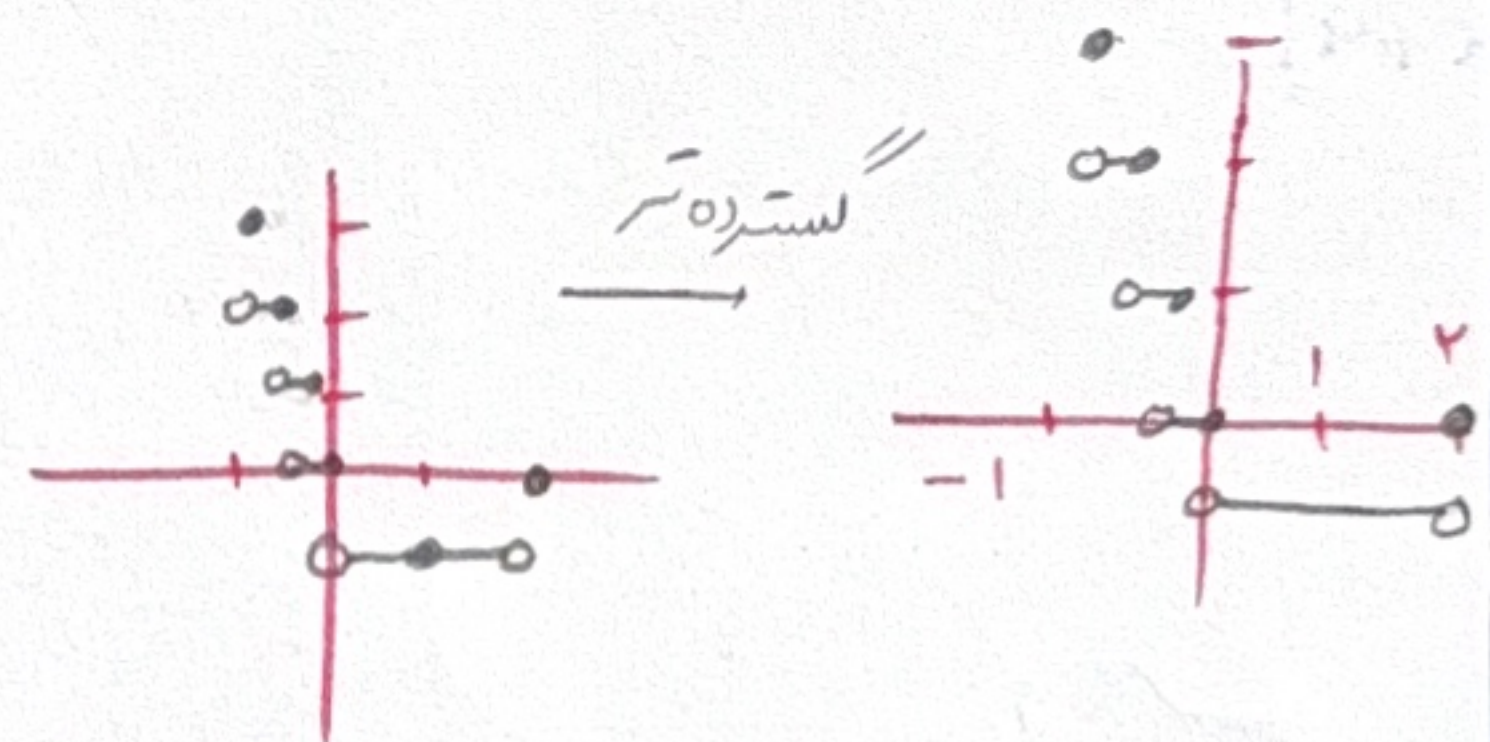
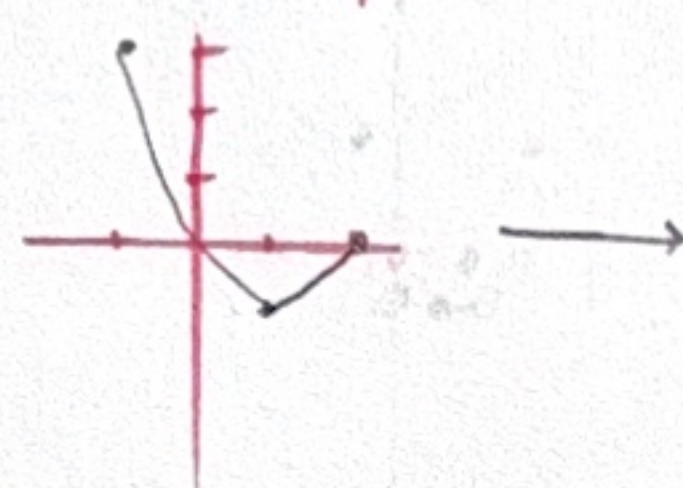


ب) $y = [x^2 - 2x]$

$x \in [-1, 2]$

$\frac{-b}{2a} = \frac{1}{2} = 1$
 $-1 \rightarrow 1+2=3$
 $0 \rightarrow 0$
 $1 \rightarrow 1-2=-1$

$x \rightarrow x-1=0$



$a + [b] = 4, 2$

$b - [a] = 2, 4$

$a + b = ?$

$\rightarrow$ مقدار $a = 0, 2$

$\rightarrow$ مقدار $b = 0, 4$

$\begin{cases} [a] + [b] = 4 \\ -[a] + [b] = 2 \end{cases}$

$a + b = 4, 4 + 1, 2 = [4, 4]$

$2[b] = 4$

$[b] = 2$

$b = 4, 4$

$a = 1, 2$

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

$[(1+\sqrt{2})^4] = ?$

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

$\frac{1}{1, 4}$

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$\Rightarrow (1+\sqrt{2})^4 = 191 - 0, \dots$

$(1+\sqrt{2})^4 = 191, \dots$

$[(1+\sqrt{2})^4] = 191$