

چند ریشه؟

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

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

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

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

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

$n = 0$
 $n = 2$

یادداشت

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

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

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

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

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

$x^2 < |x+4|$

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

$|x - \frac{1}{2}| < 3 - \frac{1}{2} \Rightarrow |x - \frac{1}{2}| < \frac{5}{2} \Rightarrow \alpha = \frac{1}{2}, \beta = \frac{7}{2}$

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

مجموعه جواب به صورت $\alpha < x < \beta$ ؟

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

بیشترین مقدار و کمترین مقدار

max = 3
min = -1

3-1 = 2

نقطه تلاقی $y = \frac{1}{2}|x| - 2$ را با $y = |x+1| - |x-2|$ بیابید. واحد به طرف های مثبت استقلال صد می شود. نمودار جدید و نمودار اولیه با یکدیگر طول متقاطع؟

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

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

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

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

$x = -3$

$\left| \frac{2n-1}{n} \right| < 2 \Rightarrow \frac{1}{n} > -2 \rightarrow n > -\frac{1}{2}$

$\frac{1}{n} < 0 \rightarrow n < 0$

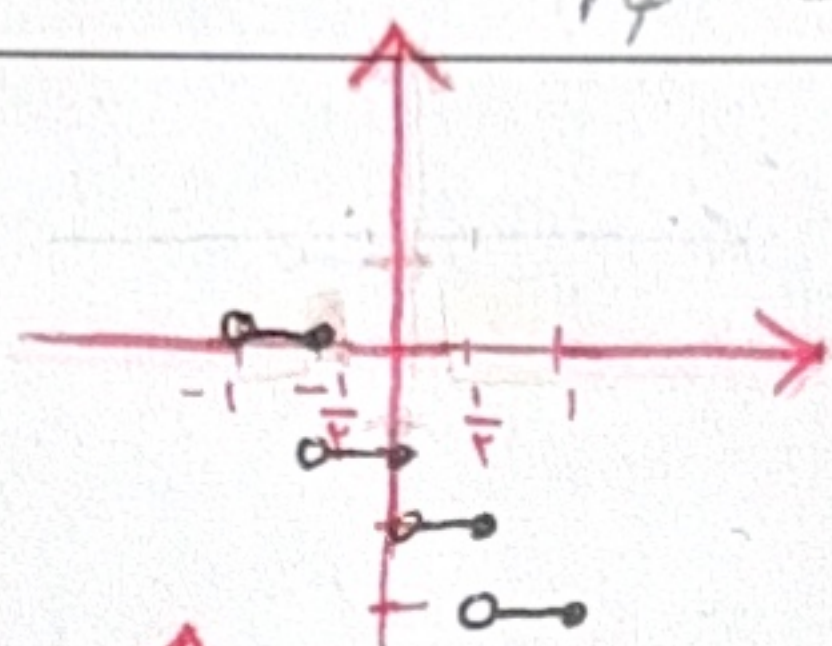
الف) $n < -\frac{1}{2}$

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

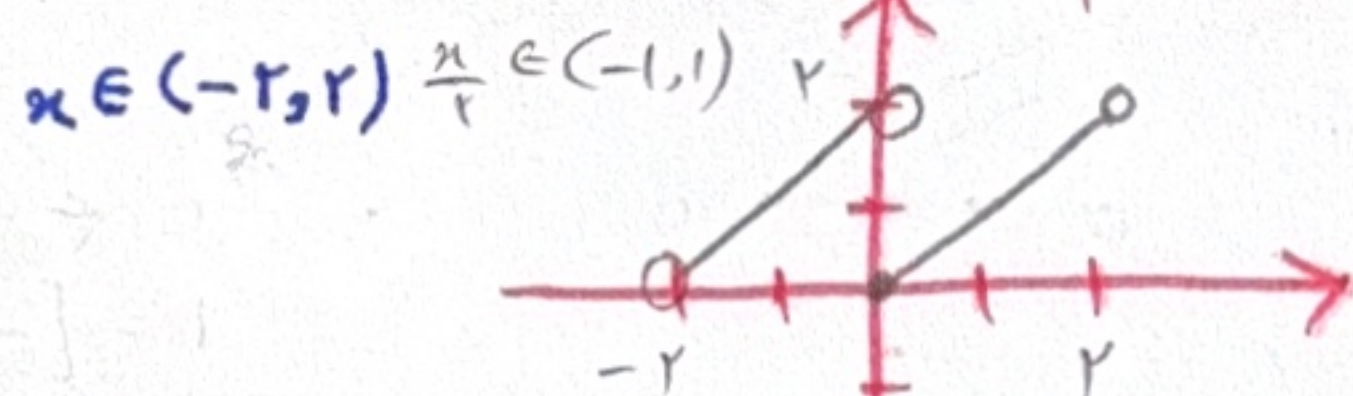
ب) $f(x) = \frac{1}{x} - [\frac{x+1}{x}]$
 $\frac{1}{x} - [1 + \frac{1}{x}]$
 $f(x) = \frac{1}{x} - 1 - [\frac{1}{x}] \rightarrow \frac{1}{x} - [\frac{1}{x}] - 1$
 $\frac{1}{x} - [\frac{1}{x}] + 1$
 $[0, 1)$

$R_f = [-1, 0)$

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

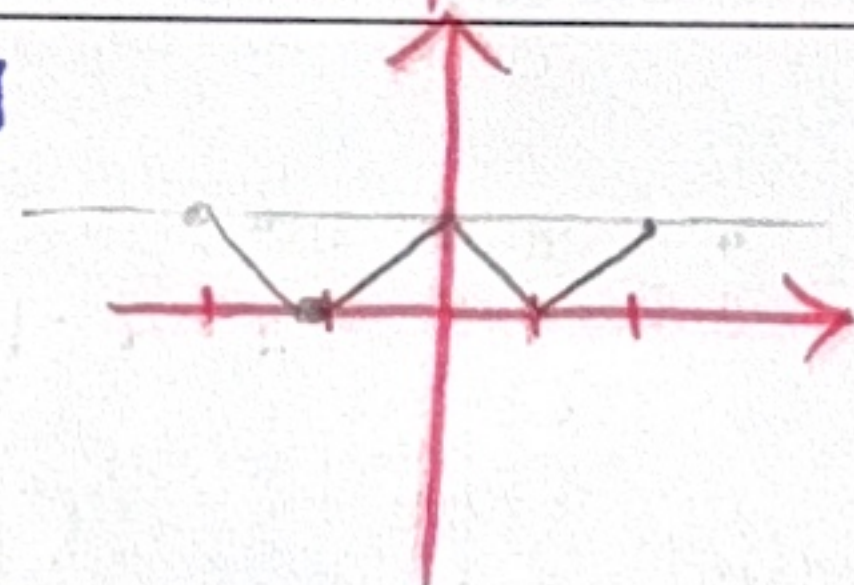


ب) $y = x - r[\frac{x}{r}]$
 $-2 < x < 0 \rightarrow x + 2$
 $0 < x < 2 \rightarrow x$



الف) $y = [|x| - 1]$
 $x \in [-2, 2]$

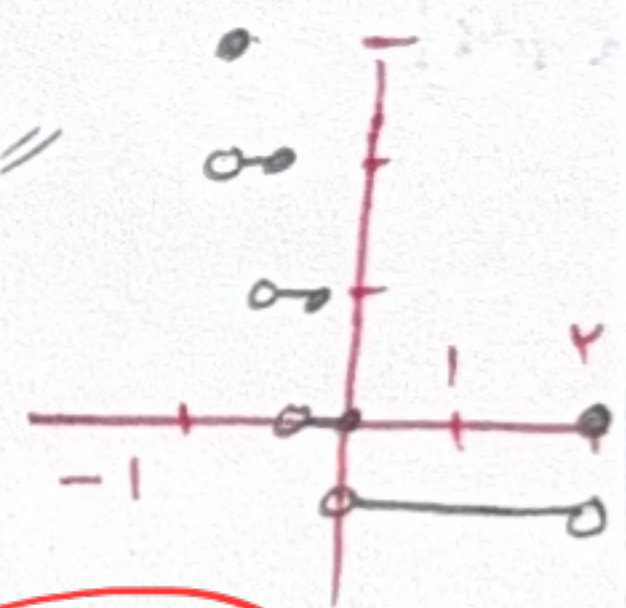
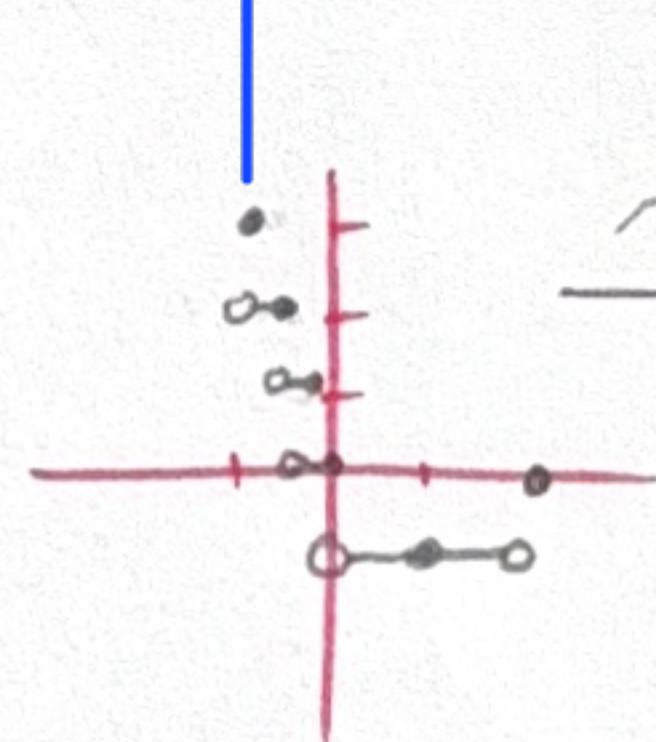
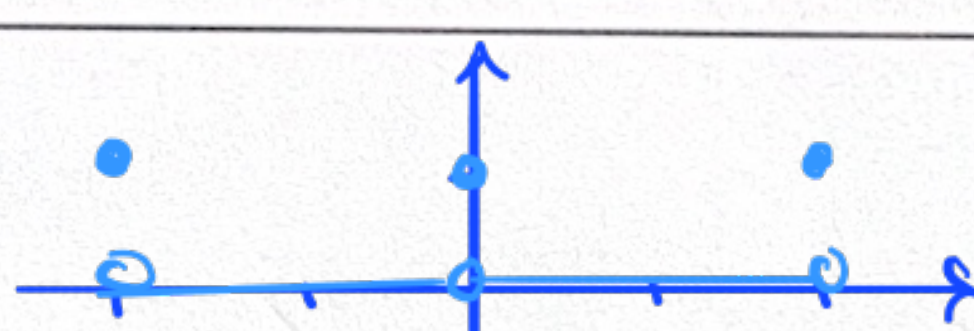
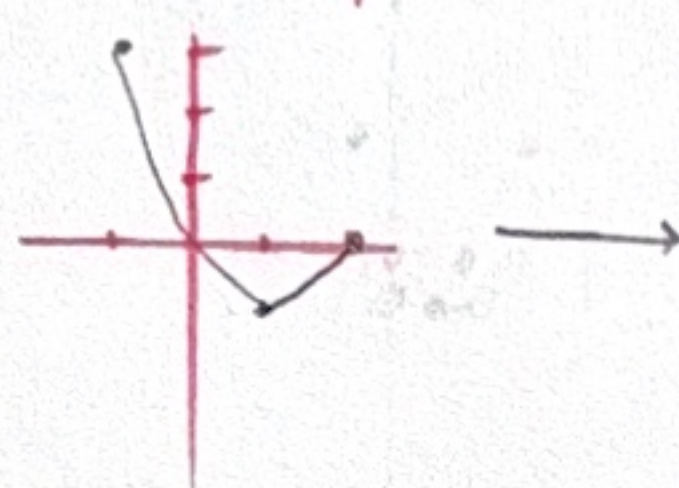
$-2 \leq x < -1 \rightarrow 1$
 $-1 \leq x < 0 \rightarrow 0$
 $0 \leq x < 1 \rightarrow 1$
 $1 \leq x < 2 \rightarrow 0$



ب) $y = [x^2 - 2x]$
 $x \in [-1, 2]$

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

$x \rightarrow x - 1 = 0$



$1, 5$

$a + [b] = 4, 2$

$\rightarrow$ مقدار $a = 0, 2$

$b - [a] = 2, 4$

$\rightarrow$ مقدار $b = 0, 4$

$a + b = ?$

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

$a + b = 4, 4 + 1, 2 = [4, 9]$

$2[b] = 4$

$[b] = 2$

$b = 4, 4$

$a = 1, 2$

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

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

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

$1, 4$

عددی بین صفر و یک
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$\Rightarrow (1 + \sqrt{2})^4 = 191 - 0, \dots$

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

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