

11/83 محمد سیرانی

$$\frac{1}{n-1} = |x-1| \begin{cases} \text{if } x > 1 \Rightarrow \frac{1}{n-1} = x-1 \Rightarrow x^2 - nx + 1 = 1 \Rightarrow x^2 - nx = 0 \Rightarrow x_1 = 1, x_2 = \sqrt{55} \\ \text{if } x < 1 \Rightarrow \frac{1}{n-1} = 1-x \Rightarrow x^2 + nx - 1 = 1 \Rightarrow x^2 + nx - 2 = 0 \Rightarrow x_1 = 1, x_2 = -2 \end{cases}$$

17, 25

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ک الف

$$\left| \frac{x-1}{n} \right| < 2 \Rightarrow \left| \frac{x-1}{n} \right| < 2 \Rightarrow \frac{x-1}{n} < 2 \Rightarrow x-1 < 2n \Rightarrow x < 2n+1$$

$$\text{II} \Rightarrow x > \frac{1}{\epsilon}$$

1, 5

ب

$$\left| \frac{x-1}{n+1} \right| > 1 \Rightarrow \frac{x-1}{n+1} > 1 \Rightarrow x-1 > n+1 \Rightarrow x > n+2$$

$$\frac{x-1}{n+1} < -1 \Rightarrow x-1 < -(n+1) \Rightarrow x < -n$$

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ج

$$y = \left| \frac{-1}{n+1} \right| - \left| \frac{0}{n} \right| + \left| \frac{1}{n-1} \right| \Rightarrow y = \frac{1}{n+1} + \frac{1}{n-1}$$

$$y > 2 \Rightarrow \frac{1}{n+1} + \frac{1}{n-1} > 2 \Rightarrow \frac{n-1+n+1}{(n+1)(n-1)} > 2 \Rightarrow \frac{2n}{n^2-1} > 2 \Rightarrow 2n > 2(n^2-1) \Rightarrow 2n > 2n^2 - 2 \Rightarrow 2 > 2n^2 - 2n \Rightarrow 2 > 2n(n-1) \Rightarrow 1 > n(n-1)$$

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د

$$y = \left| \frac{1}{2}n \right| - 2 \Rightarrow \left| \frac{1}{2}(n+4) \right| - 1 = \left| \frac{n}{2} + 2 \right| - 1 = \left| \frac{n}{2} \right| - 2$$

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

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هـ

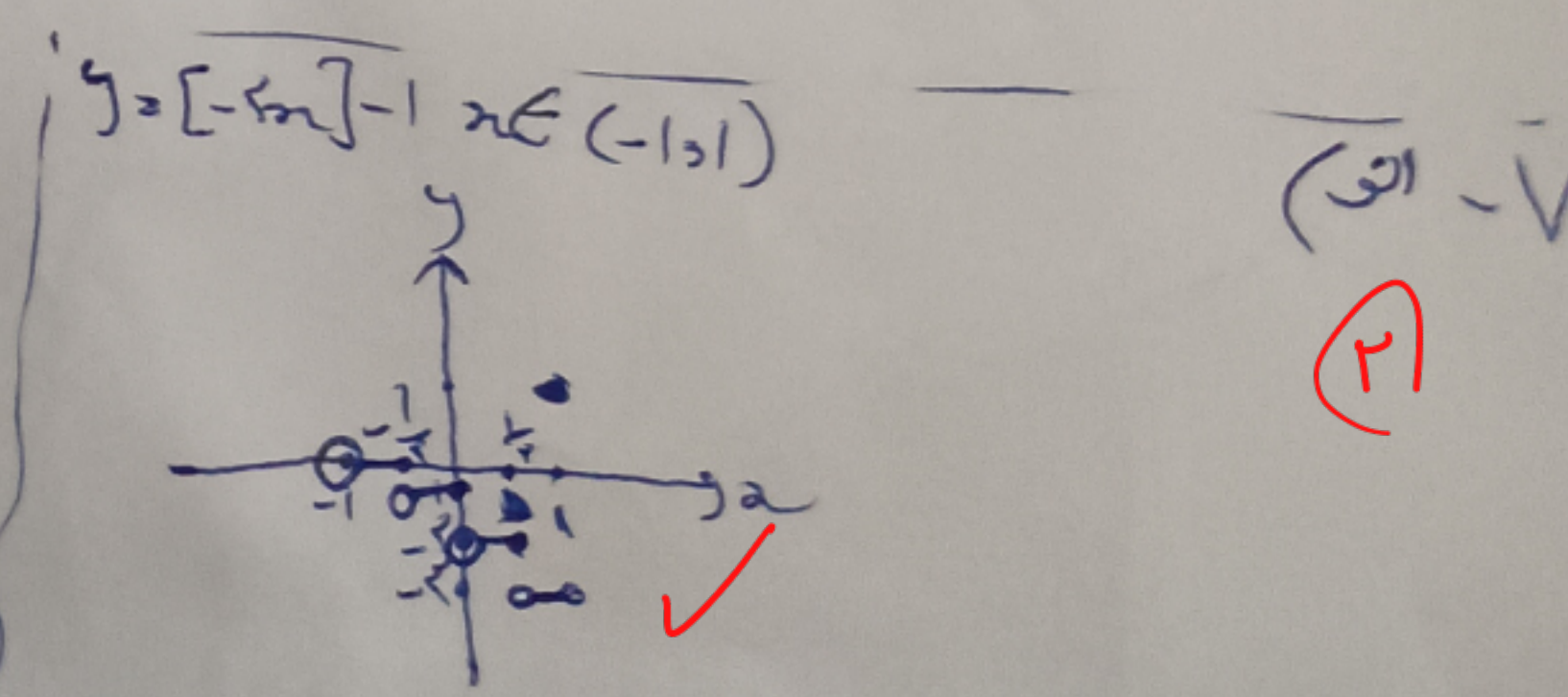
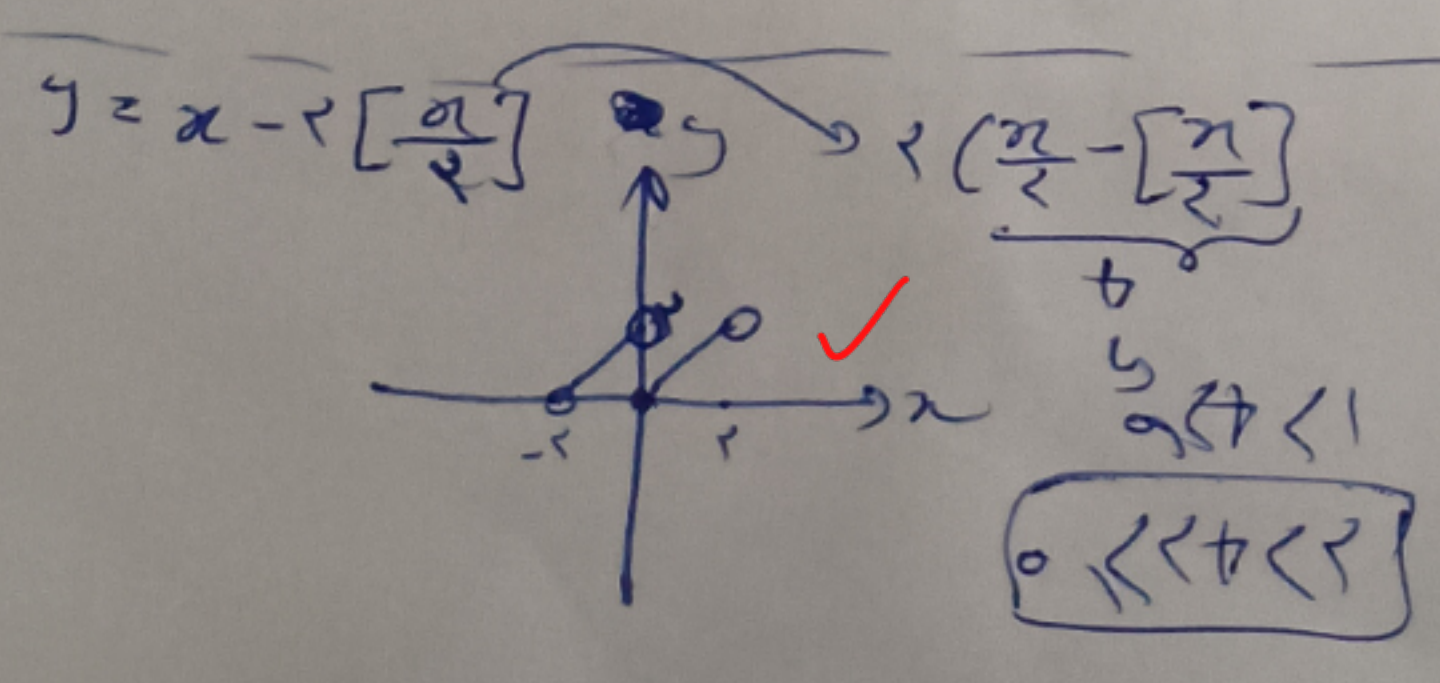
$$f(x) = \left| \frac{1}{1-x} \right| - \left| \frac{1}{n+1} \right| \Rightarrow \left| \frac{1}{1-x} \right| > \left| \frac{1}{n+1} \right| \Rightarrow \frac{1}{|1-x|} > \frac{1}{n+1} \Rightarrow |1-x| < n+1 \Rightarrow -n < x < n+2$$

2

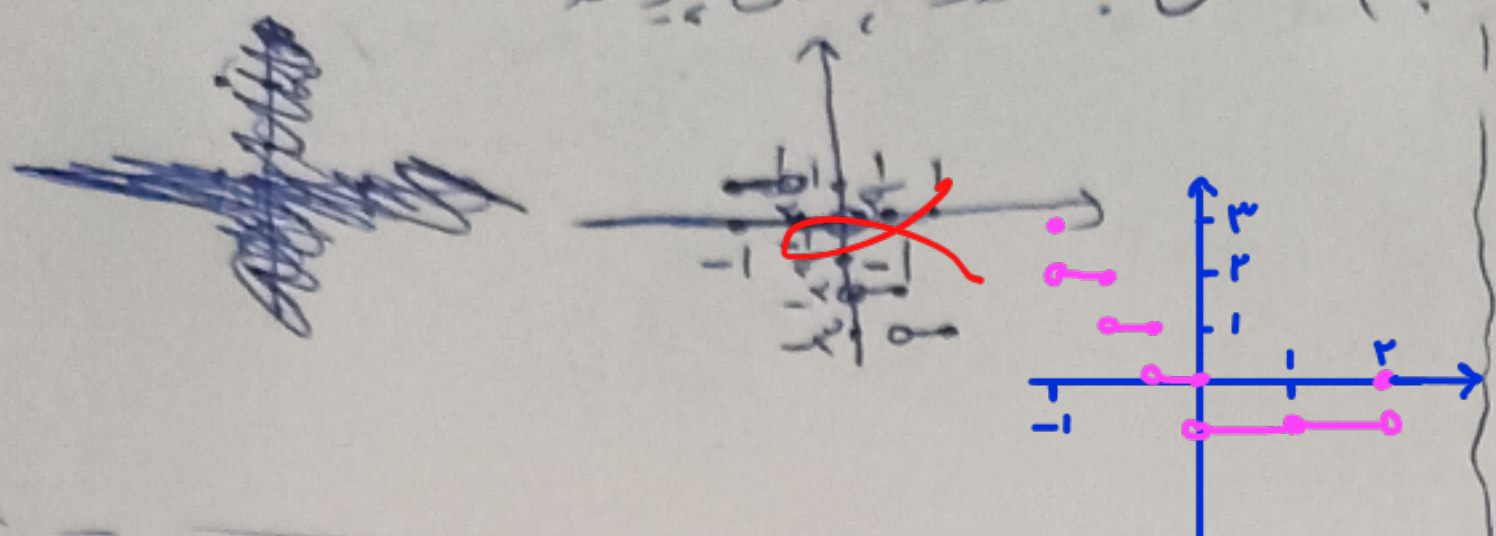
و

$$f(x) = \frac{1}{n} - \left[\frac{n}{n} \right] \geq \frac{1}{n} - \left[1 + \frac{1}{n} \right] = \frac{1}{n} - \left[\frac{1}{n} \right] - 1 \Rightarrow 0 < b < 1 \Rightarrow \frac{1}{b} < 1 \Rightarrow b > 1$$

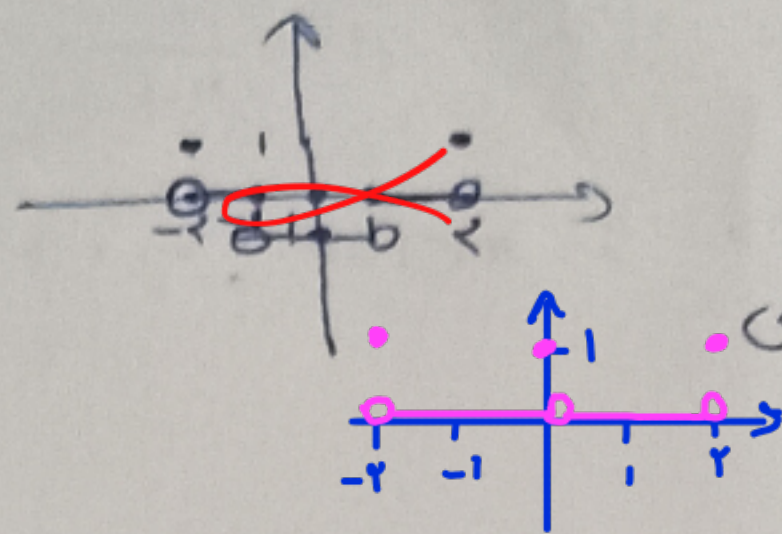
2



(ب) شکل به صورت پاره‌ای پیوسته است



(الف) $\frac{0}{-1}$



باید هر قسمت را

جدا جدا دسته بندی و بررسی کنیم.

$$\left. \begin{aligned} a + [b] &= 4, 2 \\ b - [a] &= 2, 4 \end{aligned} \right\} \rightarrow \left. \begin{aligned} [a] + [b] &= 4 \\ [b] - [a] &= 2 \end{aligned} \right\} \rightarrow \begin{cases} [b] = 2 \\ [a] = 1 \end{cases}$$

(۲, ۷۵) - ۹

$$\begin{aligned} \text{if } [b] = 2 &\Rightarrow a = 1, 2 \\ \text{if } [a] = 1 &\Rightarrow b = 2, 4 \end{aligned} \rightarrow a + b = \boxed{4, 4}$$

$$\left. \begin{aligned} 1 - \sqrt{2} &= \frac{-1}{1 + \sqrt{2}} \\ 1 + \sqrt{2} &= t \\ 1 - \sqrt{2} &= \frac{-1}{t} \end{aligned} \right\} \rightarrow \begin{aligned} (1 + \sqrt{2})^9 + (1 - \sqrt{2})^9 &= 191 \rightarrow t^9 + \left(\frac{-1}{t}\right)^9 = 191 \\ t^9 + \frac{1}{t^9} &= 191 \rightarrow t^{18} - 191t^9 + 1 = 0 \\ t^9 &= \frac{191 \pm \sqrt{191^2 - 4}}{2} \end{aligned}$$

(۲) - ۱۰

$$[(1 + \sqrt{2})^9] = 197 \quad \checkmark$$

$$\leftarrow t^9 = 197, 95$$

$$\left| \frac{n-2}{2n+1} \right| > 1 \quad n \neq -\frac{1}{2}$$

۲ ب

$$|n-2| > |2n+1| \xrightarrow{\text{توان}} n^2 - 4n + 4 > 4n^2 + 4n + 1$$

$$3n^2 + 8n - 3 < 0 \rightarrow \frac{-8 \pm \sqrt{64 - 4 \cdot 3 \cdot (-3)}}{2 \cdot 3} = \left(-3, \frac{1}{3}\right) = \left\{-\frac{1}{3}\right\}$$