

$$n \geq 0 \Rightarrow \frac{1}{n-1} = n-1 \Rightarrow n^2 - 2n + 1 = 1 \quad n^2 - 2n = 0 \quad n = 2$$

$$n = 0$$

$$n < 1 \Rightarrow \frac{1}{n-1} = -n+1 \Rightarrow n^2 - 2n + 1 = -1 \quad n^2 - 2n + 2 = 0 \quad \Delta < 0$$

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

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

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

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

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

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

$$\frac{2n-1}{n} > -2 \Rightarrow \frac{2n-1+2n}{n} > 0 \Rightarrow \frac{4n-1}{n} > 0$$

$$\frac{4n-1}{n} > 0 \Rightarrow \frac{1}{4} < n < \frac{1}{2} \Rightarrow \boxed{n > \frac{1}{4}}$$

$$n \geq -2 \Rightarrow n^2 < n+4 \Rightarrow n^2 - n - 4 < 0 \quad -2 < n < 2$$

$$(n-2)(n+2)$$

$$-2 < n < 2$$

$$n < -2 \Rightarrow -n^2 > n+4 \Rightarrow n^2 + n + 4 < 0 \quad \Delta < 0$$

$$\Rightarrow |n-0, 0| < 2, 0$$

$$\underline{\underline{\alpha = 0, 0}}$$

-1	0	2
$n-1+2n-n+2$	$n+1+2n-n+2$	$n+1-2n-n+2$
1	$2n+3$	-1
	3	-1

$$\Delta_{max} + \Delta_{min} = 3 + (-1) = \frac{2}{1}$$

$$y_1 = \left| \frac{1}{2}n \right| - 2$$

$$y_2 = \left| \frac{1}{2}n + 1 \right| - 1$$

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

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

-1	0
$n+1$	n
-1	-1

$$\boxed{n = -0}$$

$$f(m) = \frac{1}{m} - \left\lfloor \frac{m+1}{m} \right\rfloor$$

$$\frac{1}{m} - \left[1 + \frac{1}{m} \right] = \frac{1}{m} - \left[\frac{1}{m} \right] \quad \text{for } m=1$$

$$0 < m < 1$$

$$-1+m \sim [-1, 0)$$

$$R_f = \sim$$

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$$\begin{array}{c|c|c} -\varepsilon & 1 & \delta \\ \hline \delta & -r_m - r & -\delta \end{array} \quad \delta$$

$$[] \Rightarrow \{m \mid -\delta \leq m \leq \delta, m \in \mathbb{Z}\}$$

$$R = \{-\delta, -\varepsilon, \dots, \varepsilon, \delta\}$$

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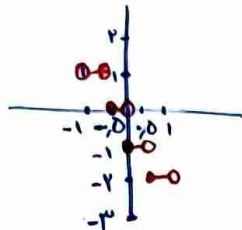
$$\text{الف) } [-r_m] - 1$$

$$(-1, -0.5) \rightarrow +\frac{1}{2} - 1$$

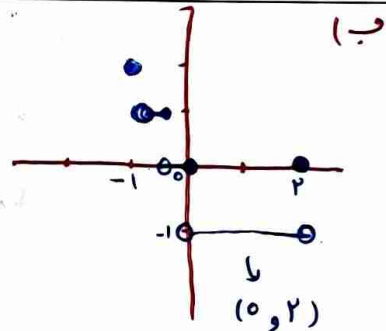
$$[0, 0.5) \rightarrow +\frac{1}{2} - 1$$

$$[0, 0.5) \rightarrow \frac{0}{2} - 1$$

$$[0, 0.5, 1) \rightarrow -\frac{1}{2} - 1$$



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$$b - [a] = 2, \varepsilon \sim [a] \in \mathbb{Z} \xrightarrow{\text{ceil}} 0, \varepsilon \Rightarrow [b] - [a] = 2$$

$$a + [b] = \varepsilon, 2 \sim [b] \in \mathbb{Z} \xrightarrow{\text{ceil}} 1, 2 \Rightarrow [a] + [b] = \varepsilon \Rightarrow [b] = 3 \quad [a] = 1$$

$$\left\{ \begin{array}{l} a = 1, 2 \\ b = 2, \varepsilon \end{array} \right\} \Rightarrow a + b = \underline{\underline{\varepsilon, 4}}$$

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$$(1+\sqrt{2})^9 + (1-\sqrt{2})^9 = 191$$

$$(1+\sqrt{2})^9 + \left(\frac{1}{1+\sqrt{2}} \right)^9 = 191$$

$$t^9 + \frac{1}{t^9} = 191$$

$$\dots [1+\sqrt{2}]^9 = 191$$

time ...

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