

الف) $0 < A^2 < \varepsilon$ $\xrightarrow{\text{توان ۲}}$ $0 < A < \sqrt{\varepsilon}$ $\xrightarrow{x^2}$ $0 < \frac{x}{A} - \left[\frac{x}{A}\right] < 1$ (محدود)

ب) $y = f + \sin x$
 $y = 1.4 + \sin x \Rightarrow y \in [1.3, 1.5]$
 $\sin x = -1 \Rightarrow y = 1.3$
 $\sin x = 1 \Rightarrow y = 1.5$

$\begin{array}{c} -3 & -2 & -1 & 0 & 1 & 2 & 3 \\ + & - & + & - & + & - & + \end{array}$

$\frac{a^2 - \varepsilon}{a^2 - 1} \Rightarrow \frac{ay - \varepsilon}{y - 1} \Rightarrow \frac{ay - \varepsilon}{a - 1} \Rightarrow y^2$

$\frac{ay - \varepsilon}{a - 1} \Rightarrow p, q \in \mathbb{R} \setminus \{1\}$

$f(0) = 1$

$f(x) = \frac{x}{a} \rightarrow R_f = (-\infty, \frac{x}{a}] \cup (1, +\infty) \xrightarrow{a+b+c = \frac{A}{T}}$

الف) $n + \frac{1}{n} \leq t \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

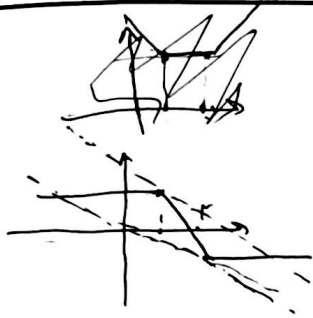
$t + \sqrt{t} \leq R \Rightarrow R \in [2 + \sqrt{2}, +\infty)$

$\lim_{n \rightarrow \infty} \frac{1}{n} \rightarrow 0$
 $\lim_{n \rightarrow \infty} \frac{1}{n} \rightarrow 0$
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$\begin{array}{l} n=1 \rightarrow 9, 6 \\ n=2 \rightarrow 9, 7 \\ n=3 \rightarrow 9, 8 \\ n=4 \rightarrow 9, 9 \\ n=5 \rightarrow 1, 0 \\ n=6 \rightarrow 1, 1 \\ n=7 \rightarrow 1, 2 \\ n=8 \rightarrow 1, 3 \\ n=9 \rightarrow 1, 4 \end{array}$

$\sqrt{4+10} + 19 + \sqrt{4+10} \Rightarrow \sqrt{4+10} + 19 + \sqrt{4+10}$

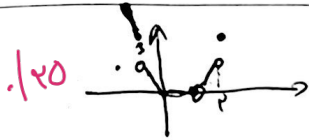
$a \leq 0, f(x) = \sqrt{bx+c} \Rightarrow f(x) \geq 0, bx+c \geq 0$
 $f(x) \geq 0, \frac{bx+c}{b} \geq 0$
 $b=1, c=-2$



for $f(x) = kx \Rightarrow f(1) = 1$
 $f(x) = kx \Rightarrow f(x) < -1 \Rightarrow \emptyset$

$f(x) = kx \Rightarrow f(x) = -1 \Rightarrow \boxed{k = -\frac{1}{x}}$
 $f(1) < 1$

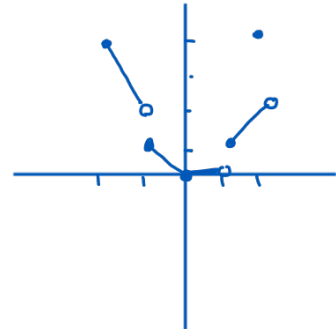
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$Ry = [0, 2] - \{x\}$



$Ry = [-x, x]$



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$\frac{n+1+n+1}{n^2+n} = \frac{n+1}{n} \Rightarrow \frac{n(n+1)}{n(n+1)} = \frac{n}{n} = 1 \Rightarrow R = \{0, 1\}$
 $\boxed{-2}$

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$\frac{(n-1)(n-1)}{(n-1)} \Rightarrow n-1 = y \Rightarrow n = y+1 \Rightarrow n = (y+1)^2$
 $\Rightarrow R = \mathbb{R} - \{-2\}$

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$f(x) = 1 \rightarrow f(x) = 1 \rightarrow Ry = (-\infty, 1) \cup [x, +\infty)$
 $f(x) = x$

$\frac{n^2 + n^2 - n - 1}{n^2 - n} \mid \frac{n^2 - 1}{n + 1}$
 $\frac{n^2 - n}{n^2 - n}$

$n \neq \{1, -1\}$
 $y, n+1 \Rightarrow n = y+1 \Rightarrow y = \{x\}$

$R_f = \mathbb{R} - \{1, -1\}$

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