

$$f(n) = r \sin^n \left(n + \frac{\pi}{r} \right) - 1$$

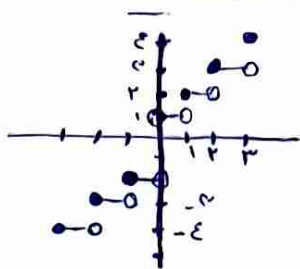
(9) اذنیك صلیحی 1

$$0 \leq \sin^n \alpha \leq 1 \rightarrow 0 \leq r \sin^n \alpha \leq r \xrightarrow{-1} R_f = [-1, 1]$$

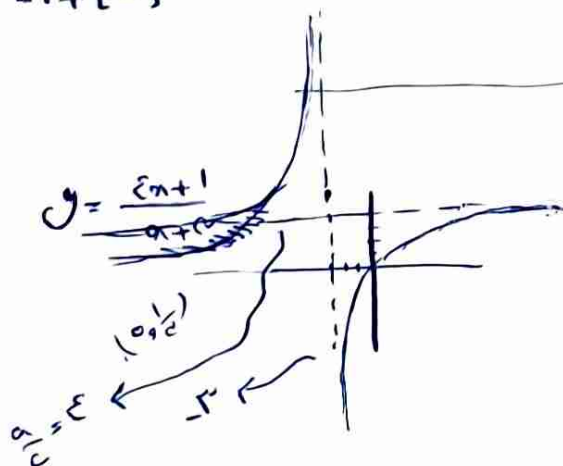
$$g(n) = r \cos^n n - \varepsilon$$

$$-1 \leq \cos^n \alpha \leq 1 \rightarrow -r \leq r \cos^n \alpha \leq r \xrightarrow{-\varepsilon} -v, -1 \quad R_g = [-v, -1]$$

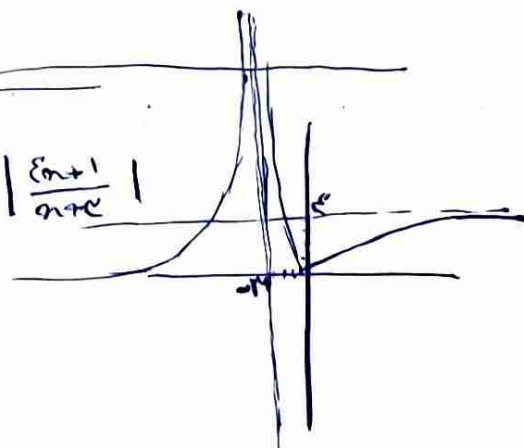
$$y = \frac{n}{|n|} + [n]$$



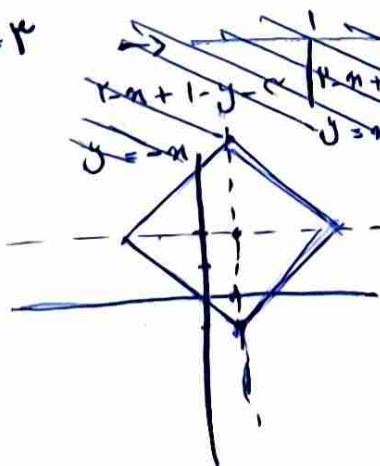
$$y = 1 + [n]$$



$$y = \left| \frac{n+1}{n+e} \right|$$



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



$$\begin{aligned} y &= n+1 & -1 \leq n \leq r \\ y &= \varepsilon - n & r \leq n \leq \varepsilon \\ y &= n - r & -1 \leq n \leq r \\ y &= \varepsilon - n & r \leq n \leq \varepsilon \end{aligned}$$

$$f(n) = n + \frac{1}{n} + r \sqrt{n + \frac{1}{n}}$$

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$$n + \frac{1}{n} = t$$

$$n + \frac{1}{n} \rightarrow [r, +\infty) \rightarrow t + r\sqrt{t} \xrightarrow{t \in [r, +\infty)} R_f = [r + r\sqrt{r}, +\infty)$$

دایره، بیضی، ...

$$g(n) = (r - \sin n)(1 + \sin n)$$

$$- \sin^2 n + r \sin n + r$$

$$\hookrightarrow -1 \leq \sin n \leq 1 \rightarrow R_g = [0, \varepsilon]$$

$$f(n) = -\frac{1}{r}n + 1$$

$$D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$\hookrightarrow -\frac{1}{r}(1+2+\dots+9) + 9(1) = \underline{\underline{v8}}$$

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$$f(n) = \sqrt{an^2 + bn + c}$$

$$a = 0$$

$$D_f = [r, +\infty) \rightarrow \begin{cases} r b + c = 0 \\ r b + c = 1 \end{cases} \rightarrow \boxed{b = 1, c = -r, a = 0}$$

$$f(r) = 1$$

$$g(n) = \sqrt{n^2 + \varepsilon} \sim \frac{-b}{2a} = 0 \quad R_g = [r, +\infty)$$

$\sqrt{\varepsilon} \sim r$

v

$$\frac{n^2 - \varepsilon n}{n + r} \sim \frac{n(n^2 - \varepsilon)}{n + r} = \frac{n(n+r)(n-r)}{n + r} = n^2 - rn = \underline{\underline{(n-1)^2 - 1}} \rightarrow \min = -1$$

$$n^2 - rn = 1 \rightarrow n = \frac{r}{\varepsilon} \rightarrow a = -r, b = \varepsilon$$

$$f\left(\frac{-r + \varepsilon}{-r}\right) = f(-1) = \underline{\underline{3}}$$

1

$$y = \sqrt[n]{n^r + an^r + bm - 1}$$

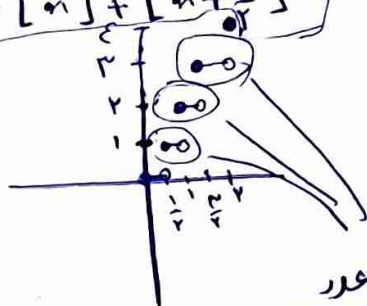
$$\text{let } \rightarrow \sqrt[n]{(n-r)^r} \rightarrow n^r - 4n^r + 12n - 1 \quad \begin{matrix} a = -4 \\ b = 12 \end{matrix}$$

$$[a, b] = [-4, 12]$$

$$n \in [-4, 12] \rightarrow n-r \begin{cases} \max = 1 \\ \min = -1 \end{cases}$$

$$R_f = [-1, 1]$$

$$y = [n] + [n+1]$$



$$\frac{1}{r} < n < 1 \rightarrow y = 1$$

$$1 < n < \frac{2}{r} \rightarrow y = 2$$

$$\frac{2}{r} < n < 2 \rightarrow y = 3$$

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