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(2)

$$-\frac{\pi}{2} + 1 \leq x \leq \frac{\pi}{2} + 1$$

$$\left[-\frac{1}{\epsilon}, \frac{1}{\epsilon}\right] \rightarrow \text{دامنه } f$$

$$g_r = \sqrt{|2f_{n+1} - \pi|}$$

(مافکتی)

$$-2 \leq 2f_{n+1} \leq 2$$

$$-5 \leq 2f_{n+1} - \pi \leq 1$$

$$0 \leq |2f_{n+1} - \pi| \leq 5$$

$$R_f = [0, \sqrt{5}]$$

$$D_f = \left[-\frac{1}{\epsilon}, \frac{1}{\epsilon}\right]$$

$$F(n) = \left| \frac{n+1}{r_{n+1}} \right| \xrightarrow[\substack{\text{محدوده } f \\ n=2}}{\left| \frac{n-2+1}{r_{n-2}+1} \right|} = \left| \frac{n-1}{r_n - \pi} \right|$$

(محدوده)

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$$g(n) = \left| \frac{n-1}{r_n - \pi} \right| + 1$$

$$n + 1 + \left| \frac{n-1}{r_n - \pi} \right| < .$$

صفحه آخر

$$\left| \frac{n-1}{r_n - \pi} \right| < -(n+1) \rightarrow \frac{n-1}{r_n - \pi} < -(n+1) \quad \times$$

~~نتیجه~~
~~پایه~~

$$(2f_{n+1} - \pi) \geq 2f_{n+1} - \pi \geq n-1$$

جواب ؟

$$2f_{n+1} - \pi \geq n-1$$

$$2f_{n+1} - \pi \geq 0$$

$$\rightarrow n - \pi - 1 > 0 \quad \left\{ \frac{1}{1-\sqrt{5}} - \frac{1}{1+\sqrt{5}} \right\}$$

$$f(x) \rightarrow f(x-a) + b$$

③ استعاره:

$$f(x) = -\frac{1}{r}x^2 + \frac{r}{a}x + 1$$

$$x_{ext} = -\frac{b}{r/a} = \frac{-\frac{r}{a}}{-\frac{r}{a}} = \frac{r}{a}$$

$$f\left(\frac{r}{a}\right) = \frac{r/a}{r/a}$$

$$r-a = \frac{r}{a}$$

$$a = r - \frac{r}{a} = \frac{rV}{a}$$

$$r = \frac{r/a}{r/a} + b$$

$$b = \frac{rV}{r/a}$$

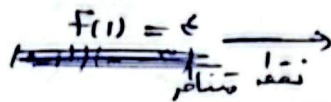
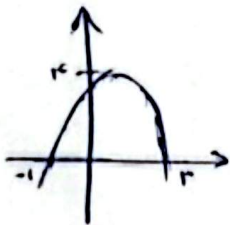
$$f\left(x - \frac{rV}{a}\right) + \frac{rV}{r/a}$$

$$y = -\frac{1}{r}\left(x - \frac{rV}{a}\right)^2 + \frac{r}{a}\left(x - \frac{rV}{a}\right) + 1 + \frac{rV}{r/a}$$

$$x^2 + \frac{r/a}{r/a} - \frac{rV}{a}x$$

منتهی آخر

$$-\frac{1}{r}x^2 - \frac{1}{r}\frac{r/a}{r/a} + \frac{rV}{a}x + \frac{r}{a}x - \frac{rV}{r/a} + 1 + \frac{rV}{r/a} = 0$$



$$y = 1 - (r/a) F(r/a + r) = -V$$

$$r/a + r = 1$$

$$r/a = -1$$

$$r = -\frac{1}{r/a}$$

$$\alpha\beta = \frac{V}{a}$$

$$D_f = [a, r]$$

$$D_g = [-1, b]$$

$$a < x \leq r$$

$$-1 < x < b$$

$$-1 < x+1 < b+1$$

$$a < x-1 \leq r$$

$$-r < x \leq b-1$$

$$a+1 < x \leq a$$

$$b-1 = a$$

$$a+1 = -r$$

$$b = y$$

$$a = -r$$

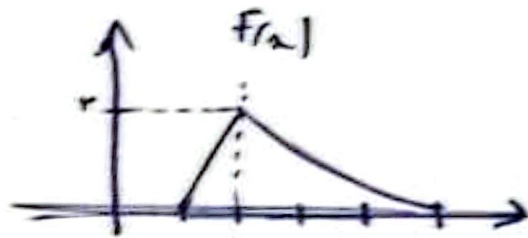
$$a-b = (-r)$$

⑤

②

①

②



$$-1 \leq x \leq 0$$

$$-1 \leq x - r_n \leq 0$$

$$-1 \geq r_n - x \geq -\infty$$

$$-1 \geq r_n \geq -r$$

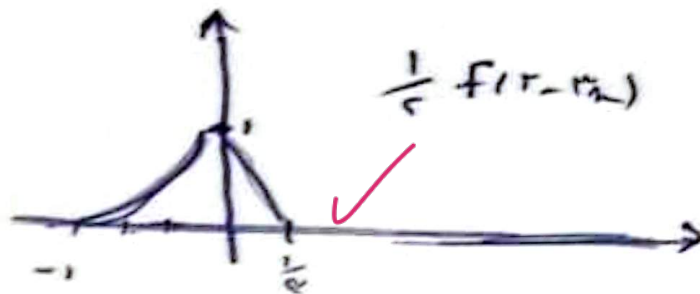
$$\frac{1}{r} \geq x \geq -1$$

$$f(x) = x$$

$$x - r_n = x \rightarrow x = 0$$

~~②~~

①



$$y = -1 \quad \text{c.} \quad r \quad \quad \quad r$$

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$$D_{f(n)} = [-2, 4]$$

$$-2 \leq \frac{m_n + 2}{n} \leq 4$$

$$-1 \leq m_n + 2 \leq 4$$

$$-12 \leq m_n \leq 18 \quad \rightarrow \quad -4 \leq n \leq 4$$

$$D_{f'(n)} = [-4, 4] \checkmark$$

$$\frac{m_n - 1 - 2}{-1} \leq n \leq \frac{m_n + 1 - 2}{1}$$

$$D_{f'(n)} = [-1, 1] \checkmark$$

سؤال: آیا می‌توانیم ثابت کنیم که f در $[0, 1]$ برآی f است؟

$$\frac{m(-1) + 1}{2} \leq n < \frac{m(1) + 1}{2}$$

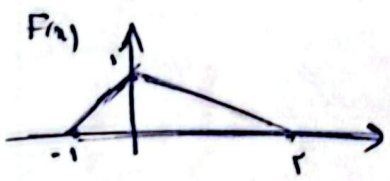
$$-1 \leq 2 - m_n < 1$$

$$+1 \geq m_n - 2 > -1$$

$$3 \geq m_n > -1$$

$$\frac{3}{2} \geq n > -\frac{1}{2}$$

$$D'_{f(n)} = \left(-\frac{1}{2}, \frac{3}{2}\right] \checkmark$$



$$-1 \leq m_n + 1 \leq 2$$

$$-2 \leq m_n \leq 1$$

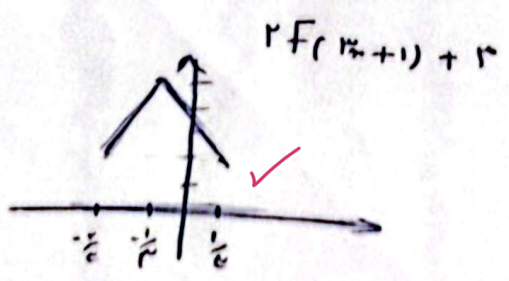
$$-\frac{3}{2} \leq n \leq \frac{1}{2}$$

$$m_n + 1 = 0$$

$$n = -\frac{1}{2}$$

$$n \rightarrow f(m_n + 1) = f(n) + \frac{1}{n}$$

$$2f(1) + 1 = 4$$



(2) (3)

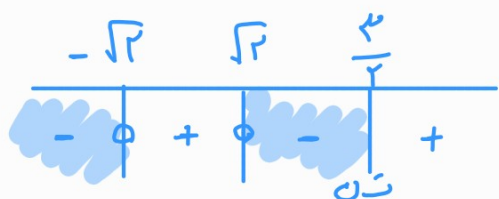
رأس: $(h, K) \xrightarrow{\text{معادله خط}} y = a(n-h)^2 + K = -\frac{1}{3}n^2 + \frac{2}{3}n + 1 \rightarrow a = -\frac{1}{3}$ -9

رأس: $(4, 3) \rightarrow y = -\frac{1}{3}(n-4)^2 + 3 \xrightarrow{y=0} -\frac{1}{3}(n-4)^2 = -3 \rightarrow \begin{cases} n=7 \\ n=1 \end{cases}$

$g(n) = \left| \frac{(n-2)+1}{2(n-2)+1} \right| + 1 = \left| \frac{n-1}{2n-3} \right| + 1$ -10

$n + g(n) < 0 \rightarrow \left| \frac{n-1}{2n-3} \right| < -1-n$ از به قدر مطلق بزرگتر شده پس باید مثبت باشد: $-1-n > 0 \rightarrow n < -1$

$\xrightarrow{n < -1} \frac{n-1}{2n-3} < -1-n \rightarrow \frac{2n^2-4}{2n-3} < 0 \rightarrow \frac{2(n-\sqrt{2})(n+\sqrt{2})}{2n-3} < 0$



$\xrightarrow{n < -1} n < -\sqrt{2} \rightarrow (-\infty, -\sqrt{2})$