

تکلیف 9

دوازدهم A

مریم شوقی

$$f(n+r) = \begin{cases} r^{n+\omega} & n \geq 1 \\ r^{n-1} & n < 1 \end{cases} \quad y = \sqrt{f(r-n) - f(n+1)}$$

سوال 1

$$n+r=t \rightarrow n=t-r \rightarrow r^{n+\omega} = r^{(t-r)+\omega} = r^{t-1}$$

$$\rightarrow r^{n-1} = r^{(t-r)-1} = r^{t-2}$$

$$n \geq 1 \Rightarrow t-r \geq 1 \Rightarrow t \geq r+1 \quad n < 1 \rightarrow t-r < 1 \rightarrow t < r+1$$

تابع f تابع صعودی است!

$$y = \sqrt{f(r-n) - f(n+1)} \rightarrow f(r-n) \geq f(n+1)$$

$$\text{تابع صعودی است} \rightarrow r-n \geq n+1 \Rightarrow 2n \leq r-1 \Rightarrow n \leq \frac{r-1}{2}$$

$$\rightarrow D = (-\infty, 1]$$

$$f(n) = (n^r + n)^r \quad f \text{ of } (n) < f(n^r)$$

(سوال 2)

تابع صعودی است

تابع

$$f(n) < n^r \rightarrow (n^r + n)^r < n^r$$

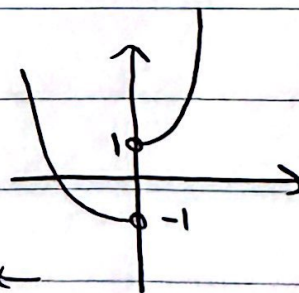
$$\rightarrow n^r + n < n \rightarrow n^r < 0 \rightarrow n \in (-\infty, 0)$$

$$y = |n| \left(n^r + \frac{1}{n} \right) \quad n > 0 \rightarrow n^r + 1$$

 $n \neq 0$

$$n < 0 \rightarrow -(n^r + 1)$$

توابع گسسته = تابع گسسته



(سوال 3)

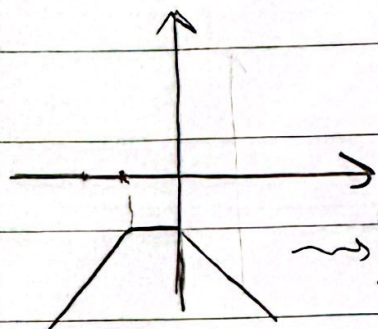
$$f(n) = \frac{r_{n+1}}{|n| - |n+1|} \quad (-\infty, a] \rightarrow \text{محدود}$$

max a = ?

(سوال ۴)

$$\begin{aligned} & \frac{r_{n+1}}{-n + n+1} = \frac{r_{n+1}}{1} = r_{n+1} \\ & \frac{r_{n+1}}{-n - n - 1} = \frac{r_{n+1}}{-2n - 1} = -\frac{r_{n+1}}{2n+1} = -(r_{n+1}) \\ & \frac{r_{n+1}}{n - n - 1} = \frac{r_{n+1}}{-1} = -r_{n+1} \end{aligned}$$

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



$$\boxed{\max a = 0}$$

$$y = \log_{\frac{1}{p}}(n^2 - 2n - 1)$$

(سوال ۵)

$$\log_{\frac{1}{p}} n \rightarrow \text{نزولی است}$$

$$\text{ext} \left| -\frac{b}{2a} = +1 \rightarrow n_{\min} \right.$$

$n^2 - 2n - 1 \rightarrow$ باید نزولی است یا نه؟
تکینگی در دو جا هم، است یا صعودی شود

$$\boxed{n \in (-\infty, 1]}$$

$$f(n) = (a^2 - 2)^n$$

(سوال ۶)

$$a^2 - 2 > 1 \rightarrow a^2 > 3 \rightarrow \boxed{a > \sqrt{3}} \quad \boxed{a < -\sqrt{3}}$$

(الف) است صعودی

$$a^2 - 2 \geq 1 \rightarrow a^2 \geq 3 \rightarrow \boxed{a \geq \sqrt{3}} \quad \boxed{a \leq -\sqrt{3}}$$

(ب) است صعودی

آپادانا

$$\min k = ?$$

(سوال ۷)

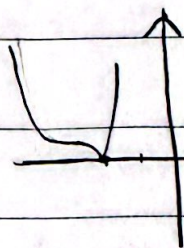
$$f(n) = n^3 + an^2 + bn + c$$

$$\rightarrow f(n) = (n+m)^3 + n \rightarrow (-3 \text{ و } -1) \text{ ماس}$$

$$g(n) = n^3 \rightarrow (0, 1) \rightarrow \text{ماس}$$

$$\left. \begin{array}{l} \rightarrow m=3 \\ n=-1 \end{array} \right\}$$

$$\rightarrow f(n) = (n+3)^3 - 1 \rightarrow |f(n)| = |(n+3)^3 - 1|$$



$$\rightarrow (n+3)^3 - 1 = 0$$

$$\rightarrow (n+3)^3 = 1 \rightarrow n+3 = 1 \rightarrow n = -2$$

$$\boxed{\min k = -2}$$

(سوال ۸)

$$f(n) = n + \sqrt{n} - 2 \quad f \circ f(n) \leq f(\sqrt{n})$$

$$\left(\sqrt{n} + \frac{1}{\sqrt{n}} \right)^2 - 2 \rightarrow \text{ماس}$$

$$f(n) \leq \sqrt{n}$$

$$\rightarrow n + \sqrt{n} - 2 \leq \sqrt{n} \rightarrow n \leq 2$$

$$\rightarrow n \in [0, 2]$$

$$\text{مماس } (2) \text{ و } 0$$

$$f(n) = \sqrt[3]{4 \cos^2 n - 1} - \sqrt[3]{1 - 4 \cos^2 n}$$

$$R_f = [a, b]$$

(سوال ۹)

$$b - a = ?$$

$$\min t \rightarrow \sqrt[3]{-1} - \sqrt[3]{1} \rightarrow \frac{1}{\sqrt[3]{-1}} - \frac{1}{\sqrt[3]{1}} = -\frac{4}{\sqrt[3]{1}}$$

$$\max t \rightarrow \sqrt[3]{1} - \sqrt[3]{-1} \rightarrow \frac{1}{\sqrt[3]{1}} - \frac{1}{\sqrt[3]{-1}} = \frac{4}{\sqrt[3]{1}}$$

$$\rightarrow \left[-\frac{4}{\sqrt[3]{1}}, \frac{4}{\sqrt[3]{1}} \right]$$

$$\Rightarrow b - a = \frac{4}{\sqrt[3]{1}} + \frac{4}{\sqrt[3]{1}}$$

$$= \boxed{\frac{8}{\sqrt[3]{1}}}$$

آپا

$$f(n) = n - [n+r] \quad g(n) = \frac{r^n - r^{-n}}{r}$$

(سوال ۱۰)

$$g \circ f(n) \rightarrow S = 2$$

$$f(n) = \frac{n - [n]}{[0.91]} - r \rightarrow Rf = [-r, -1)$$

$$Rf = Dg \rightarrow g(-r) = \frac{r^{-r} - r^r}{r} = \frac{\frac{1}{\varepsilon} - \varepsilon}{r} = -\frac{1-\varepsilon}{\varepsilon}$$

$$g(-1) = \frac{r^{-1} - r^1}{r} = \frac{\frac{1}{r} - r}{r} = -\frac{r^2 - 1}{\varepsilon}$$

$$\rightarrow Rg \circ f(n) = \left[-\frac{1-\varepsilon}{\varepsilon}, -\frac{r^2 - 1}{\varepsilon} \right)$$