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تکلیف ۲۳۰

$$g(u) = f(\tan^r u + \sqrt{r} \cos u)$$

$$g'(\frac{\pi}{2}) = \sqrt{r} \quad f'(r) = ?$$

$$y = \tan^r u \rightarrow y' = r \tan^{r-1} u (\tan^r u + 1)$$

$$y = \sqrt{r} \cos u \rightarrow y' = 0 + (-\sin u)(\sqrt{r}) = -\sqrt{r} \sin u$$

$$g'(u) = f'(\tan^r u + \sqrt{r} \cos u) (r \tan^{r-1} u (\tan^r u + 1) - \sqrt{r} \sin u)$$

$$g'(\frac{\pi}{2}) = f'(r) (r(r) - \sqrt{r}(\frac{\sqrt{r}}{r})) = r f'(r)$$

$$r f'(r) = \sqrt{r} \rightarrow f'(r) = \frac{\sqrt{r}}{r} \quad \text{جواب}$$

$$f(u) = \frac{1 + \cos^r u}{1 - \cos^r u}$$

$$g(u) = \frac{r}{r - \cos u} \quad \text{— ۲}$$

$$\cos x = a$$

$$f(u) = \frac{1 + a^r}{1 - a^r} \quad \left. \begin{array}{l} f(u) - r g(u) = \frac{1 + a^r}{1 - a^r} - \frac{r}{r - a} = \frac{a^r - a}{1 - a^r} \\ g(u) = \frac{r}{r - a} \end{array} \right\} = \frac{a(a - r)(a + r)}{(r - a)(r + a)} = -a$$

$$(f(u) - r g(u))' = (-\cos u)' = \sin u \quad \checkmark$$

$$f'(\frac{\pi}{2}) - r g'(\frac{\pi}{2}) = + \sin \frac{\pi}{2} = \frac{-1}{r} \quad \text{جواب}$$

$$f(u) = |u - r| \sqrt{a u} \quad \text{— ۳}$$

$$u > \frac{r}{2} \rightarrow f(u) = (u - r) \sqrt{a u}$$

$$f'(u) = \sqrt{a u} + \frac{a(u - r)}{2 \sqrt{a u}}$$

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$$n < \frac{r}{\epsilon} \rightarrow f(n) = (r - \epsilon n) \sqrt{an}$$

$$f'(n) = -\epsilon \sqrt{an} + \frac{a(r - \epsilon n)}{2\sqrt{an}}$$

نیم‌ماس ها

$$f(n) = r \left( \epsilon \sqrt{an} + \frac{a(r - \epsilon n)}{2\sqrt{an}} \right) = 2\sqrt{4}$$

if  $n = \frac{r}{\epsilon} \rightarrow \sqrt{\frac{r}{\epsilon}} a = \sqrt{4} \rightarrow 14 \times \frac{r}{\epsilon} a = 4$

جواب

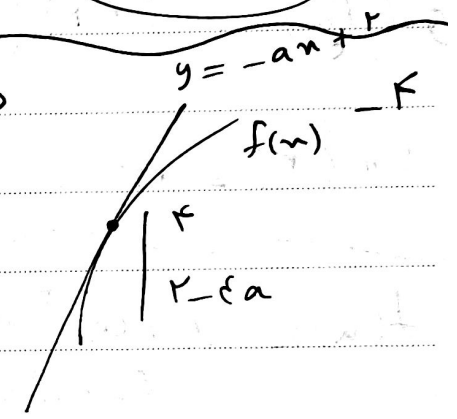
$$a = \frac{1}{r}$$

در نقطه اول به طول ۴ بر  $f(n)$  ماس

$$y + an = r$$

$$f(\epsilon) + f'(\epsilon) = -1 \quad \rightarrow \quad y' = -a$$

$$\left. \begin{array}{l} f(\epsilon) = r - \epsilon a \\ f'(\epsilon) = -a \end{array} \right\} \begin{array}{l} r - \epsilon a - a = -1 \\ \partial a = r \rightarrow a = \frac{r}{\epsilon} \end{array}$$



$$f'(\epsilon) = -a = \frac{r}{\epsilon} = -0.4 \quad \text{جواب}$$

$$Vy - n = a$$

$$y = \frac{an - 1}{rn + 1}$$

$$y = \frac{n + a}{v}$$

چون خطا بر منف ماس

است در عمل تقریب

مفاد داریم

$$\Delta = 0 \rightarrow \frac{an - 1}{rn + 1} = \frac{n + a}{v}$$

$$rn^2 + 14n + a = van - v$$

$$rn^2 + (14 - va)n + 12 = 0$$

$$\Delta = 0 \rightarrow (14 - va)^2 - 4(r)(12) = 0$$

$$(14 - va)^2 = 144 = (12)^2$$

$$14 - va = -12 \quad \rightarrow \quad 14 - va = 12 \quad \rightarrow \quad va = 2$$

$$va = 2 \rightarrow \boxed{a = \frac{2}{v}} \checkmark$$

$$\boxed{a = \frac{2}{v}} \quad \text{EX}$$

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نکات

حیون در نامبر ۱ بر منفرجه است پس  $a = 2$  و  $Q$  است  $(n=2)$

4 - در نقاط بر طول ۲ بر محور  $n$  ها  $f(n) = n^3 + an - b$

محاسن ہیں:

$$f(2) = 0 \rightarrow 1 + 2a - b = 0 \rightarrow \boxed{b - 2a = 1}$$

$$f'(2) = 0 \rightarrow f'(n) = 3n^2 + a \xrightarrow{\text{if } n=2} 12 + a = 0$$

$$\boxed{b = -14}$$

$$\boxed{a = -12}$$

$$b - a = -14 - (-12) = \boxed{-2}$$

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

-11

$$y = \frac{\sqrt{n} + 1}{\sqrt{n} - 1} \rightarrow y\sqrt{n} - y = \sqrt{n} + 1$$

$$y\sqrt{n} - \sqrt{n} = y + 1 \rightarrow \sqrt{n} = \frac{y+1}{y-1}$$

$$\rightarrow n = \left(\frac{y+1}{y-1}\right)^2 \rightarrow y = f^{-1}(n) = \left(\frac{n+1}{n-1}\right)^2$$

$$y' = 2 \left(\frac{n+1}{n-1}\right) \left(\frac{-2}{(n-1)^2}\right) \xrightarrow{\text{if } n=2} 2(2)(-2) = \boxed{-12}$$

$$f(n) = (n^2 + 1)^n (an + 1)$$

-9

$$\text{میانگین} = \frac{f(0) - f(-1)}{0 - (-1)} = -11$$

[-1, 0]

$$f(-1) - f(0) = 11 \rightarrow 1 - 1a - 1 = 11$$

$$1a = -11 \rightarrow$$

$$\boxed{a = -11}$$

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نکته

آفتاب تغییر لفظ  $\rightarrow f'(n) = 3(n^2+1)^2(2n)(2n+1) +$   
 $n = -2a \rightarrow$   
 $a(n^2+1)^3$

$$\boxed{n = +1}$$

$$f'(1) = 3(2)(2)\left(\frac{1}{2}\right) + \left(\frac{-1}{2}\right)(8)$$

جواب

$$f'(1) = 8$$

$$y = \sin n \cos 2n$$

آفتاب متوسط تابع  $\rightarrow \frac{f\left(\frac{\pi}{2}\right) - f\left(\frac{\pi}{4}\right)}{\frac{\pi}{2} - \frac{\pi}{4}} = \frac{-1 - 0}{\frac{\pi}{4}} = \frac{-4}{\pi} I$   
 در بازه  $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$

$$\begin{cases} f\left(\frac{\pi}{2}\right) = -1 \\ f\left(\frac{\pi}{4}\right) = 0 \end{cases}$$

آفتاب متوسط  $y = \sin^2 n - \cos^2 n = \sin^2 n - \cos^2 n$

تغییر تابع  $\rightarrow \frac{f\left(\frac{\pi}{2}\right) - f\left(\frac{\pi}{4}\right)}{\frac{\pi}{2} - \frac{\pi}{4}} = \frac{1 - 0}{\frac{\pi}{4}} = \frac{4}{\pi} II$   
 در بازه  $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$

$$\begin{cases} f\left(\frac{\pi}{2}\right) = 1 \\ f\left(\frac{\pi}{4}\right) = 0 \end{cases}$$

$$\frac{I}{II} = \frac{\frac{-4}{\pi}}{\frac{4}{\pi}} = -1 \quad \text{جواب}$$