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فکر میکنم آتیه

$$f(u) = \frac{|2u - 4|}{\sqrt[3]{u^2}} \quad \begin{matrix} \nearrow f(1) = \frac{2-4}{\sqrt[3]{1^2}} \\ \nearrow u=1 \rightarrow 2-u \end{matrix}$$

$$g(u) = \frac{\sqrt{u^2 - 4u + 4} + \sqrt{3u}}{\sqrt[3]{u^2}}$$

$$f'(1) - 2g'(1) \rightarrow (f - 2g)' \rightarrow \frac{(2-4u) - 2(2-u + \sqrt{3u})}{\sqrt[3]{u^2}}$$

$$\Rightarrow \frac{2-4u - 2 + 2u - 2\sqrt{3u}}{\sqrt[3]{u^2}}$$

$$= \frac{-2\sqrt{3u}}{\sqrt[3]{u^2}} \rightarrow \frac{-2\sqrt{3} \cdot u^{\frac{1}{2}}}{u^{\frac{2}{3}}}$$

$$\Rightarrow -2\sqrt{3} (u^{-\frac{1}{6}})$$

$$\Rightarrow f'(u) = -2\sqrt{3} \left(-\frac{1}{6}\right) (u^{-\frac{1}{6}})$$

$$= f'(1) = \frac{\sqrt{3}}{3}$$

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$$f(u) = \begin{cases} bu + c & u < a \\ \frac{1}{u} & u \geq a \end{cases}$$

$$Cf' = \frac{-1}{u^2}$$

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$$ab + c = \frac{1}{a} \Rightarrow a^r b + ac = 1$$

$$\frac{-1}{a^r} = b \Rightarrow a^r b = -1$$



$$-1 + ac = 1$$

$$ac = 2$$

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$$f'(-1) = \frac{u}{r}$$

$$T = \Delta$$

$$g'(x) = 1$$

$$g'(n) = f'(n+1) + \underbrace{f'(n+1)}_{\mu f'(1)}$$

$$g'(-1) = f'(-1) + f'(\epsilon) = \frac{9}{r} = u$$

$$-1 + 1 = \epsilon \Rightarrow f'(-1) = f'(\epsilon) = \frac{u}{r}$$

$$g'(-1) = r f'(-1) = r \times \frac{u}{r} = 9$$

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$$\lim_{h \rightarrow 0} \frac{f(a+h) - f(a-h)}{h(a-h)}$$

$$f'(a) = \sqrt[3]{1} + \frac{1}{3\sqrt[3]{1^2}} = \frac{10}{12}$$

$$\begin{aligned} \lim_{h \rightarrow 0} \frac{-2f(a-h)f'(a-h) + 3f'(a-h)}{h-2h} &\Rightarrow \frac{-2f(a)f'(a) + 3f'(a)}{h} \\ &= \frac{-2 \cdot \frac{10}{12} + 3 \cdot \frac{10}{12}}{h} = \frac{10}{12} \end{aligned}$$

سوال ۱۱ تابع $f(x)$ در $x=0$ نقطه گوشه دارد پس مشتق ناپذیر است.

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

$$f'_+(1) = f'_-(1) \rightarrow 1 = \frac{1}{r} b \times a^{-\frac{1}{r}} \rightarrow 1 = \frac{1}{r} b(1)^{-\frac{1}{r}} \rightarrow b = \frac{r}{r}$$

$$a+b = \frac{1}{r} + \frac{1}{r} = \frac{2}{r} = 2$$

$$y = x^p - \ln x + C \rightarrow y' = px - \frac{1}{x} \Rightarrow px - \frac{1}{x} = -\frac{1}{x} \Rightarrow x = 1$$

$$yy' = x^{p-1} \xrightarrow{\text{تجزیه}} u = \frac{1}{x} \rightarrow u = -\frac{1}{x}$$

$$f(1) = \frac{1}{2} \Rightarrow \frac{1}{2} \text{ نهایه است}$$

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$$f(u) = \frac{1}{\sqrt[m]{u-1}} e^{-u} \quad g(u) = \frac{1}{u^m - |u^m|}$$

$$g'(-\sqrt[m]{2}) \times f(g(-\sqrt[m]{2}))$$

$$\Rightarrow \frac{1}{u^m - (-u^m)} = \frac{1}{2u^m}$$

$$(f \circ g)'(-\sqrt[m]{2})$$

$$\frac{1}{\sqrt[m]{\frac{2}{2u^m}}} = \frac{1}{\frac{1}{u}} = u \Rightarrow (f \circ g)'(-\sqrt[m]{2}) = 1$$

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سوال 3

نقطة لوشة $\rightarrow f'(a) \neq f'_+(a)$

$m=0 \rightarrow f'(a) = f'_+(a) \times 0 \in$

$m=1 \rightarrow \begin{cases} f'(a)=0 \\ f'_+(a)=1 \end{cases} \rightarrow f'(a) \neq f'_+(a)$

$m \geq 2 \rightarrow \begin{cases} f'(a)=0 \\ f'_+(a)=0 \end{cases} \rightarrow f'(a) = f'_+(a)$ غنق

بمقدار صحيح m

سوال 4

$f(x) = -3a - \omega, f'(x) = -a$

$f'(x) - f(x) = 2 \rightarrow 1 - a - (-3a - \omega) = 2 \rightarrow a = \frac{-\mu}{2}$

$\frac{f(x)}{f'(x)} = \frac{-3a - \omega}{-a} = \frac{-3(-\frac{\mu}{2}) - \omega}{\frac{\mu}{2}} = \frac{-1}{\frac{\mu}{2}}$

$$g(u) = \frac{1}{\sqrt[3]{u^2-1}} \Rightarrow g'(u) = \frac{-2u}{\sqrt[3]{(u^2-1)^2}}$$

$$g'\left(\frac{u}{\sqrt{u}}\right) = \frac{-\frac{2 \times u}{\sqrt{u}}}{\sqrt[3]{\left(\frac{u}{u}-1\right)^2}} = \frac{-4 \times 14}{\sqrt[3]{5}} \Rightarrow -11\sqrt{2} \Rightarrow g\left(\frac{u}{\sqrt{u}}\right) = \frac{1}{\sqrt[3]{\frac{9}{4}-1}}$$

$$f'(v) = 3v \times v = 48 \Rightarrow f\left(g\left(\frac{u}{\sqrt{u}}\right)\right) = -11\sqrt{2} \times 48 = -141\sqrt{2} \times 48$$