

کلیف شماره ۲۲

پس دوازدهم A

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برای برآی

تابع در نقطه‌ای مفرشتی ناپهیراست: $f_+(0) = 1$ و $f_-(0) = -1$ و $a+1=b$

$$\Rightarrow \frac{2b\alpha}{\sqrt[3]{n}} = 1 \Rightarrow b = \frac{3}{2} \Rightarrow a = \frac{1}{2} \Rightarrow a+b = 2 \quad \checkmark$$

$$f(x) = \frac{2|x-2|}{\sqrt[3]{x^2}} \xrightarrow{\text{در نقطه}} \frac{2(2-x)}{\sqrt[3]{x^2}} \text{ و } g(x) = \frac{|x-2| + \sqrt[3]{x}}{\sqrt[3]{x^2}} \xrightarrow{\text{در نقطه}} \frac{(2-x) + \sqrt[3]{x}}{\sqrt[3]{x^2}}$$

$$h(x) = f(x) - 2g(x) \Rightarrow \frac{2(2-x)}{\sqrt[3]{x^2}} - 2 \frac{(2-x) + \sqrt[3]{x}}{\sqrt[3]{x^2}} = \frac{-2\sqrt[3]{x}}{\sqrt[3]{x^2}}$$

$$h'(x) = \frac{\frac{2}{\sqrt[3]{x^2}} - \frac{2x}{\sqrt[3]{x^2}} \times \frac{1}{2\sqrt[3]{x}}}{\sqrt[3]{x^2}} = \frac{\sqrt[3]{x}}{2} \quad \checkmark$$

$$b = \frac{-1}{a^2} \Rightarrow -\frac{1}{a^2} \times a + c = \frac{1}{a} \Rightarrow c = \frac{2}{a} \Rightarrow a < 2 \quad \checkmark$$

$$m(x-a)^{m-1} \neq 0 \Rightarrow m=1$$

۴- یک مقدار $\checkmark$

$$(f \circ g)' = \frac{1}{\sqrt[3]{\frac{1}{x^3-1x^3} - \frac{1}{1x^3-x^3}}} \xrightarrow{\text{در نقطه}} \frac{1}{\sqrt[3]{\frac{1}{2x^3} + \frac{1}{2x^3}}} = \frac{1}{\sqrt[3]{\frac{2}{x^3}}}$$

$$\Rightarrow (f \circ g)' = 1 \Rightarrow (f \circ g)' = 1 \quad \checkmark$$

$$f'(3) = -9 \text{ و } f(3) = -3a - \omega \Rightarrow f'(3) - f(3) = 9a + \omega = 2$$

$$9a = -2 \Rightarrow a = -\frac{2}{9} \Rightarrow \frac{9}{2} - \omega = -\frac{1}{\sqrt[3]{2}} \Rightarrow \omega = \frac{1}{\sqrt[3]{2}} + \frac{9}{2} \quad \checkmark$$

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$$g\left(\frac{x}{\sqrt{x}}\right) = 2 \checkmark \Rightarrow f(g(x)) = (x) + 1$$

$$y' = g'\left(\frac{x}{\sqrt{x}}\right) f'(x) = -\sqrt{x} \times \frac{1}{\sqrt{x}} = -1 \times (-\sqrt{x}) = \sqrt{x}$$

→ مطلوب

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$$\Rightarrow (f \circ g)' = \frac{f'(x)}{g'(x)} \times \checkmark g'(x) = \frac{1}{\sqrt{x}} \times \sqrt{x} = 1$$

$$\Rightarrow \frac{\sqrt{x} \times \sqrt{x} \times \sqrt{x}}{-1 \times \sqrt{x}} = -1 \quad g(x) = \frac{1}{\sqrt{x+1}} = (x+1)^{-\frac{1}{2}} \rightarrow g'(x) = -\frac{1}{2} (x+1)^{-\frac{3}{2}} \times 1 = -\frac{1}{2} (x+1)^{-\frac{3}{2}}$$

$$g'\left(\frac{x}{\sqrt{x}}\right) = -\frac{1}{2} \times \frac{1}{\sqrt{x}} \left(\frac{x}{\sqrt{x}}\right)^{-\frac{3}{2}} = -\frac{1}{2} \times \frac{1}{\sqrt{x}} \times \frac{\sqrt{x}}{x} = -\frac{1}{2} \times \frac{1}{x} = -\frac{1}{2x} \rightarrow g'\left(\frac{x}{\sqrt{x}}\right) = -\frac{1}{2x}$$

$$g(x) = f'(x+1) + 3 f'(3x+1) \Rightarrow f'(-1) + 3 f'(7)$$

$$f'(-1) = f'(7) \Rightarrow g'(-2) = \frac{1}{2} + \frac{9}{2} = \frac{10}{2} = 5 \checkmark$$

2

$$\frac{(f(\omega-h)-1)(f(\omega-h)-2)}{h(\omega-h)} \quad , \quad f(\omega) = 2$$

$$\Rightarrow \lim_{h \rightarrow 0} \frac{f(\omega-h) - f(\omega)}{-h} \times \frac{f(\omega-h) - f(\omega)}{h - \omega} = -\frac{f'(\omega)}{\omega}$$

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$$f'(x) = \sqrt{x+2} + \frac{x-2}{\sqrt{x+2}} \Rightarrow f'(\omega) = 2 + \frac{1}{12} = \frac{25}{12}$$

$$\Rightarrow \frac{-f'(\omega)}{\omega} = -\frac{25}{12}$$

$$y = \frac{1}{x} + \frac{1}{y} \Rightarrow 2x - 2 = -2 \Rightarrow x = 1 \Rightarrow y = 2$$

A: $\frac{1}{2}$ ✓

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