

$$\lim_{n \rightarrow 1^+} f(n) = \lim_{n \rightarrow 1^-} f(n) = f(1) \Rightarrow a+1=b$$

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$$\begin{aligned} n=0 \text{ تابع در } & \Rightarrow n=1 \text{ در } \Rightarrow f_-(1) = f_+(1) \\ \text{مشتق ناپذیر} & \Rightarrow \text{مشتق پذیر} \Rightarrow 1 = \frac{2}{3}b \end{aligned}$$

$$\Rightarrow b = \frac{3}{2} \text{ و } a = \frac{1}{2} \Rightarrow a+b=2$$

$$f'(1) - 2g'(1) = [f(1) - 2g(1)]' \Rightarrow f(1) - 2g(1) =$$

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$$\approx \frac{|2n-1|}{\sqrt[3]{n^2}} - \frac{2\sqrt{n^2-5n+5} + \sqrt{4n}}{\sqrt[3]{n^2}} = \frac{-2\sqrt{4n}}{\sqrt[3]{n^2}} = -2\sqrt{4}n^{-\frac{1}{6}}$$

$$-2\sqrt{4}n^{-\frac{1}{6}} \xrightarrow{\text{مشتق}} \frac{\sqrt{4}}{3}n^{-\frac{7}{6}} \xrightarrow{n=1} \frac{\sqrt{4}}{3} f'(1) - 2g'(1) = \frac{\sqrt{4}}{3}$$

$$\lim_{n \rightarrow a^+} f(n) = \lim_{n \rightarrow a^-} f(n) = f(a)$$

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$$\Rightarrow ba+c = \frac{1}{a} \Rightarrow \begin{cases} -\frac{1}{a} + c = \frac{1}{a} \\ \Rightarrow \frac{2}{a} = c \\ \Rightarrow ac = 2 \end{cases}$$

$$f'_+(a) = f'_-(a) \Rightarrow b = -\frac{1}{a^2}$$

$$f'_+(a) \neq f'_-(a)$$

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$$\Rightarrow ((n-a)^m + b)' \neq 0 \Rightarrow m(n-a)^{m-1} \neq 0$$

$$n=a \Rightarrow m=1$$

یک مقدار

$$g'(x) \neq (g(x))' = (\log)'(x)$$

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$$x < 0 \Rightarrow g(x) = \frac{1}{\sqrt[3]{x}} \quad f(x) = \frac{1}{\sqrt[3]{x}} \Rightarrow \log(x) = x$$

$$\Rightarrow (\log)'(\sqrt[3]{x}) = 1$$

$$f'(x) = -a$$

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$$f(x) = -ax - a$$

$$f'(x) - f(x) = -a - (-ax - a) = x \Rightarrow ax + a = x$$

$$\Rightarrow a = -\frac{x}{x}$$

$$\Rightarrow \frac{f(x)}{f'(x)} = \frac{-\frac{1}{x}}{-\frac{x}{x}} = \frac{1}{x}$$

$$g(x) = (x^2 - 1)^{-\frac{1}{3}} \rightarrow g'(x) = -\frac{1}{3} \times 2x \times (x^2 - 1)^{-\frac{4}{3}}$$

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

$$g(\frac{\sqrt{2}}{\sqrt{2}}) = 2$$

$$(f \circ g)'(\frac{\sqrt{2}}{\sqrt{2}}) = g'(\frac{\sqrt{2}}{\sqrt{2}}) f'(g(\frac{\sqrt{2}}{\sqrt{2}})) = -\frac{1}{3} \sqrt{2} \times f'(2)$$

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

$$\Rightarrow \text{جواب سوال} = \underline{2}$$

$$g(-2) = f'(-1) + f'(4)$$

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$$f'(4) = f'(-1) \text{ به علت تقارن } \Rightarrow g(-2) = 2f'(-1)$$

$$\Rightarrow g(-2) = 2$$

Arman

$$\frac{0}{0} \xrightarrow{\text{Hôpital}} \frac{-r f'(a-h) f(a-h) + r f(a-h)}{-rh+a}$$

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

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

$$4y - 3n = 1 \rightarrow \text{نسبة} = \frac{1}{r} \xrightarrow{\text{نسبة}} \text{نسبة} = -r$$

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$$y = n^r - 3n + a \rightarrow y' = rn - 3 \quad y' = -r \Rightarrow n = 1$$

| $\frac{1}{r}$ نسبة

Arman