

حصہ ثانی - ۱۲ دھند A

$$f(a) = \begin{cases} a + \sqrt{a^2} & a < 1 \\ b \sqrt[3]{a^2} & a \geq 1 \end{cases}$$

[illegible]

$$\frac{f(r)}{r} = \frac{r}{r^2} = \frac{1}{r} \Rightarrow 1 = \frac{r}{r} \Rightarrow r = 1$$

$$f'(1) - 2g'(1) = (f-2g)'(1) \rightarrow \left(\frac{-2a+\varepsilon}{\sqrt[3]{a^2}} - \frac{-2a+\varepsilon+2\sqrt{3}a}{\sqrt[3]{a^2}} \right)$$

$$\rightarrow \frac{-2\sqrt{3}a}{\sqrt[3]{a^2}} \xrightarrow{\text{مشتق}} -2\sqrt{3} \frac{a^{\frac{1}{3}}}{a^{\frac{2}{3}}} \Rightarrow (-2\sqrt{3} a^{-\frac{1}{3}})' \rightarrow \frac{2\sqrt{3}}{3} a^{-\frac{4}{3}} \xrightarrow{a=1} \frac{2\sqrt{3}}{3}$$

مشتق $\rightarrow a=a \rightarrow ab+c=\frac{1}{a}$ $a^2b+ac=1$

مشتق $\rightarrow a=a \rightarrow b=-\frac{1}{a^2}$ $a^2b=-1 \uparrow \rightarrow -1+ac=1$ $ac=2$

④ $m > 0$, a در میانه است (مستقیم) $\rightarrow$ $f(a) = \begin{cases} b & a < a \\ b + \frac{1}{(a-a)^m} & a > a \end{cases} \rightarrow$ نامنظمی باشد $\times$

$m = 0$ $f(a) = \begin{cases} b & a < a \\ b+1 & a > a \end{cases} \times$

$m = 1$ $f(a) = \begin{cases} b & a < a \\ b+a-a & a > a \end{cases} \rightarrow f'(a) = \begin{cases} 0 & a < a \\ 1 & a > a \end{cases}$ مشتق ها نابرابر است $\checkmark$

درای یک مقدار

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

$$f(x) \xrightarrow[\text{در } x=1]{\text{در } x=1} -3a - 5$$

$$f'(x) - f(x) = 2$$

$$-a + 3a + 5 = 2 \quad 2a = -3 \quad \boxed{a = -\frac{3}{2}}$$

$$\frac{f(x)}{f'(x)} = \frac{-3a - 5}{-a} = \frac{\frac{9}{2} - 5}{\frac{3}{2}} = \frac{-\frac{1}{2}}{\frac{3}{2}} = \boxed{\left(-\frac{1}{3}\right)}$$

$$(f \circ g\left(\frac{x}{\sqrt{\lambda}}\right))' \rightarrow g'\left(\frac{x}{\sqrt{\lambda}}\right) \times f'\left(g\left(\frac{x}{\sqrt{\lambda}}\right)\right)$$

$$g'(a) = \frac{-2a}{3\sqrt[3]{(a^2-1)^2}} \xrightarrow{a=\frac{x}{\sqrt{\lambda}}} \frac{-4 \times 1}{3\sqrt{\lambda} \times 1} \quad \left\{ \begin{array}{l} f(a) = \left(a \left[a^2 + \frac{1}{r}\right]\right)^r + 1 \\ \text{و } \rightarrow \left(a \left[a^2\right] + \frac{a}{r}\right)^r + 1 \end{array} \right.$$

$$f(a) = \left(a + \frac{a}{r}\right)^r + 1 \rightarrow f'(a) = r \left(a + \frac{a}{r}\right) \left(1 + \frac{1}{r}\right) \quad \left(\frac{x}{\sqrt{\lambda}}\right)^r = \frac{9}{\lambda} = 1, \dots, [3] = 1$$

$$g\left(\frac{x}{\sqrt{\lambda}}\right) = 2 \rightarrow f'\left(g\left(\frac{x}{\sqrt{\lambda}}\right)\right) = f'(2) = r(2+1)\left(1+\frac{1}{r}\right) = 2 \times 3 \times \frac{3}{2} = 9$$

$$g'\left(\frac{x}{\sqrt{\lambda}}\right) \times f'\left(g\left(\frac{x}{\sqrt{\lambda}}\right)\right) = \frac{-4}{\sqrt{\lambda}} \times 9 \rightarrow \frac{-36}{\sqrt{\lambda}} \times \frac{\sqrt{\lambda}}{\sqrt{\lambda}} = -36 \sqrt{\lambda} \rightarrow \frac{-36 \sqrt{\lambda}}{-12 \lambda \sqrt{\lambda}} = \boxed{\frac{3}{\lambda}}$$

$$g'(-2) = f'(-1) + f'\left(\frac{1}{2}\right) \rightarrow f'(-1) = f'\left(\frac{1}{2}\right) \quad \text{طبق دو ستاد دایره}$$

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

$$g(a) = \frac{1}{r a^r} \quad \text{و} \quad f(a) = \frac{1}{\sqrt[3]{r a}} \quad (f \circ g)'_{(-2\sqrt{r})} = \left(f\left(\frac{1}{r a^r}\right)\right)'$$

$$\rightarrow \left(\frac{1}{\sqrt[3]{\frac{r}{r a^r}}}\right)' = \left(\frac{1}{a}\right)' = (a)' = 1$$

$$\frac{(f(a-n)-1)(f(a-n)-2)}{n(a-n)} \xrightarrow{f(a)=2} \frac{f(a-n)-1}{a-n} \times \frac{f(a-n)-2}{n} \rightarrow f(a)$$

$$f'(a) = \frac{1}{\sqrt[3]{a+2}} + (a-2) \times \frac{1}{3\sqrt[3]{(a+2)^2}} = 2 + \frac{1}{12} = \frac{25}{12} \quad \text{--- } f'(a)$$

$$\lim_{a \rightarrow 0} \frac{f(a)-1}{a} \times f'(a) = \frac{1}{0} \times \frac{25}{12} = \frac{25}{12} \rightarrow \boxed{\frac{25}{12}}$$

$$f'(a) = 2a - 2 \quad \text{و} \quad y = \frac{1}{r}a + 1 \quad m = \frac{1}{r}$$

$$\text{میان بردار پس به خط مماس} = -2 \rightarrow 2a - 2 = -2 \quad a = 1$$

$$\xrightarrow{f'(1)} -2$$

$$\boxed{\frac{1}{-2}}$$