

① باید در $x=1$ مشتق نپذیرد $\rightarrow$ در $x=0$ پیوسته است و مشتق ندارد $\rightarrow x < 1$

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

$$a+1=b, \frac{3bx}{3\sqrt[3]{x}}=1 \Rightarrow b=\frac{3}{1} \Rightarrow a=\frac{3}{1}-1=\frac{2}{1} \Rightarrow a+b=2$$

$$(f-2g)'(1) = \frac{3/1-2}{\sqrt[3]{1}} - \frac{2|1-2|+\sqrt[3]{1}}{\sqrt[3]{1}} = \frac{-2\sqrt[3]{1}}{\sqrt[3]{1}}$$

$$\Rightarrow -2\sqrt[3]{1} x^{\frac{1}{3}-\frac{2}{3}} = -2\sqrt[3]{1} x^{-\frac{1}{3}} \xrightarrow{\text{مشتق لیتن}} \frac{1}{3}\sqrt[3]{1} x^{-\frac{4}{3}} \xrightarrow{x=1} \frac{\sqrt[3]{1}}{3}$$

$$ab+c=\frac{1}{a}, b=-\frac{1}{2^2}=-\frac{1}{4} \Rightarrow ab=-\frac{1}{4} \Rightarrow -\frac{1}{4}+c=\frac{1}{a}$$

$$\Rightarrow c=\frac{5}{4} \Rightarrow ac=(a)(\frac{5}{4})=2$$

$(n-a)^m+b=b \Rightarrow 1+b=b \times$ غلط $\leftarrow m \neq 0$ است، زیرا $m=0$ باشد

$m=1 \Rightarrow (n-a)^1+b=b \quad n=a \rightarrow b=b$ غلط

$m > 1 \Rightarrow (n-a)^m+b=b \Rightarrow m(n-a)^{m-1}=0 \rightarrow$ در این حالت $(n-a)$

صفری شود $\rightarrow$ تابع مشتق نپذیرد $\rightarrow$ مشتق ندارد $\leftarrow m=1$

$$(f \circ g(-\sqrt[3]{2}))' = f' \circ g'(n) \Rightarrow \frac{1}{\sqrt[3]{\frac{1}{2^3-|n^3|}} - \frac{1}{\sqrt[3]{2^3-|n^3|}}} = \frac{1}{\sqrt[3]{\frac{2}{2^3-|n^3|}}}$$

$$f \circ g(n)=n \Rightarrow (f \circ g)'(n)=1 \Rightarrow (f \circ g)'(-\sqrt[3]{2})=1$$

$$n=2 \Rightarrow g=-2a-a \quad g'=-a$$

$$f'(2)-f(2)=2 \Rightarrow -a+2a+a=2 \Rightarrow 2a=2 \Rightarrow a=1$$

$$\frac{f(2)}{f'(2)} = \frac{\frac{9}{2}-2}{\frac{2}{2}} = \frac{-\frac{1}{2}}{\frac{2}{2}} = -\frac{1}{2}$$

$$(f \circ g)'(\frac{w}{\sqrt{\lambda}}) = g'(\frac{w}{\sqrt{\lambda}}) \times f'(g(\frac{w}{\sqrt{\lambda}})) \quad (v)$$

$$g'(\frac{w}{\sqrt{\lambda}}) = \frac{-2w}{w \sqrt{\frac{w}{\lambda}}^3} = \frac{-\frac{w}{\sqrt{\lambda}}}{w \sqrt{\frac{w}{\lambda}}^3} = -\frac{1}{\sqrt{\lambda}} \quad , \quad g(\frac{w}{\sqrt{\lambda}}) = 2 \quad (2)$$

$$f'(2) = 2 \left(2 \left[2^2 + \frac{1}{2} \right] \right) \left(\left[2^2 + \frac{1}{2} \right] \right) = 44 \quad \checkmark$$

$$\Rightarrow (f \circ g)'(\frac{w}{\sqrt{\lambda}}) = (-\frac{1}{\sqrt{\lambda}})(44) \Rightarrow \frac{(-\frac{1}{\sqrt{\lambda}})(44)}{-12\sqrt{\lambda}} = \frac{11}{3} \quad \checkmark$$

$$g'(w) = 1 \times f'(w+1) + 3f'(3w+10) \quad w = -2 \rightarrow$$

$$g'(-2) = f'(-1) + 3f'(4) \quad (\text{استاد استاذ استاذ}) \Rightarrow f'(4) = f'(-1) = \frac{w}{2} \quad (4)$$

$$\Rightarrow g'(-2) = \frac{w}{2} + 3\left(\frac{w}{2}\right) = \frac{4w}{2} = 2w \quad \checkmark$$

$$\frac{(f(a-h)-1)(f(a-h)-2)}{h(a-h)} = \frac{(f(a)-1) \times (-f'(a))}{a} = \frac{(\frac{1}{a})(-f'(a))}{a} = \frac{1}{a^2} \left(-\frac{2a}{12} \right) = -\frac{2}{12} \quad (9)$$

$$f'(w) = \frac{w}{\sqrt{w+1}} + \frac{w-2}{w \sqrt{(w+1)^3}} \quad w = a \rightarrow 2 + \frac{1}{12} = \frac{25}{12}$$

$$4y - 3x = 1 \Rightarrow a = \frac{w}{4} = \frac{1}{4} \Rightarrow \text{نقطه تقاطع} = (-2) \quad (10)$$

$$y' = 2x - 2 = -2 \Rightarrow x = 1 \Rightarrow \text{نقطه تقاطع} = (1, 2) \quad \checkmark$$

$$y = (1)^2 - 2(1) + 2 = 1$$