

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۲۴... کلاس دوازدهم ریاضی اول

خط قرمز نیست!

شیب خط مماس $f'(3)$ را بیابید:

$$f(0)=1, f(3)=5$$

$$\text{شیب خط مماس} = \frac{y_2 - y_1}{x_2 - x_1} = \boxed{\frac{4}{3}}$$

$$\text{شیب خط مماس} = \frac{2-1}{2+1} = \frac{1}{3} \Rightarrow \text{معادله خط} = y = \frac{1}{3}x + \frac{4}{3}$$

$$\frac{1}{3}x + \frac{4}{3} = \sqrt{ax-1} \Rightarrow x^2 + (1-9a)x + 16 = 0 \quad \Delta = 0$$

$$(1-9a)^2 - 64 = 0 \Rightarrow a = \frac{2}{9} \Rightarrow f(x) = \sqrt{2x-1} \Rightarrow f(5) = \boxed{3}$$

$$y = \frac{3}{4}x + \frac{1}{4} \text{ و } f'(1) = \frac{3}{4}$$

$$\frac{(x+m)(x+3) - 1(x^2+mx+1)}{(x+3)^2} \Rightarrow \frac{(2(1)+m)(1+3) - (1^2+m(1)+1)}{(1+3)^2} = \frac{3}{4} \Rightarrow \frac{2+m}{4} = \frac{3}{4}$$

$$\Rightarrow m+2=3 \Rightarrow m=1 \Rightarrow y(1) = \frac{4}{4} = 1 \xrightarrow{\text{نقطه مماس}} (1,1) \Rightarrow f(1) - 3(1) = n \Rightarrow n = -2 \Rightarrow m+n = \boxed{-1}$$

$$f(x) = \frac{(3-\sin x)(4+3\sin x + \sin^2 x)}{(3-\sin x)(3+\sin x)} = \frac{4+3\sin x + \sin^2 x}{3+\sin x}$$

$$h(x) = f(x) = \frac{4+3\sin x + \sin^2 x}{3+\sin x} \Rightarrow h'(x) = \frac{-3\sin x - \sin^2 x}{3+\sin x} = -\sin x$$

$$h' = -\cos x = -\cos\left(\frac{\pi}{6}\right) = \boxed{-\frac{\sqrt{3}}{2}}$$

سوال از ما $(f \circ g)'(\sqrt[3]{3})$

$$|x| \text{ و } |x^3| = x \text{ و } x^3 \Rightarrow f(x) = \frac{-1}{\sqrt[3]{2x}} \text{ و } g(x) = \frac{1}{2x^3}$$

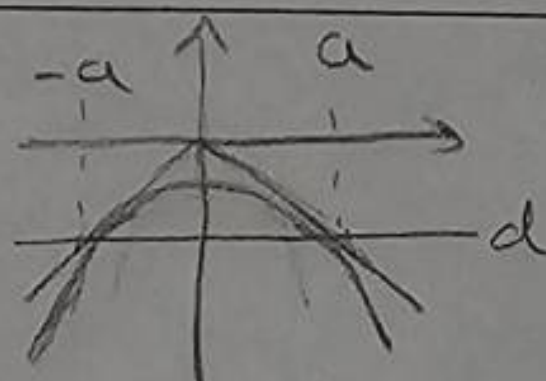
$$f(g(x)) = \frac{-1}{\sqrt[3]{2 \times \frac{1}{2x^3}}} \Rightarrow f(g(x)) = -x \xrightarrow{\text{دستگاه}} (f(g(x)))' = \boxed{-1}$$

$$x(g(x)) = f(x) - 1 \Rightarrow g(x) = \frac{f(x) - 1}{x} \Rightarrow g(x) = \frac{\left(\frac{-1 + \sin x}{1 + \sin x}\right)^2 - 1}{x}$$

$$f(x) - 1 = \left(\frac{-1 + \sin x}{1 + \sin x} - 1\right) \left(\frac{-1 + \sin x}{1 + \sin x} + 1\right) \xrightarrow{\text{مضروب}} \left(\frac{-2}{1 + \sin x}\right) \left(\frac{2 \sin x}{1 + \sin x}\right) = \frac{-4 \sin x}{(1 + \sin x)^2}$$

$$\lim_{x \rightarrow 0} g(x) = \frac{-4 \sin x}{(1 + \sin x)^2} = \lim_{x \rightarrow 0} \left(\frac{-4}{(1 + \sin x)^2} \cdot \frac{\sin x}{x} \right) = -4 \Rightarrow \lim_{x \rightarrow 0} g(x) = -4 \Rightarrow \boxed{-4}$$

$$y = x^p + 1 \xrightarrow{\text{قرینیت}} -x^p - 1 \Rightarrow f'(x) = -px$$



$$f'(a)f'(-a) = -1 \Rightarrow (-pa)(pa) = -1 \Rightarrow a = \frac{1}{p}$$

$$f\left(\frac{1}{p}\right) = -\left(1 + \left(\frac{1}{p}\right)^p + 1\right) = -\frac{a}{p} \Rightarrow y = -\frac{a}{p}$$

فاصله از مبدأ فقط است

$$f'(x) = \frac{\frac{1}{\sqrt{x}}(-2x^2 + x + 1) - (-x + 1)\sqrt{x}}{(-2x^2 + x + 1)^2} = \frac{\sqrt{x}}{-2x^2 + x + 1} = \frac{-2x^2 + x + 1}{\sqrt{x}(-2x^2 + x + 1)^2} = \frac{f(x)}{x} = f(x)$$

$$\Rightarrow \frac{\sqrt{x}}{x} = \frac{-2x^2 + x + 1}{\sqrt{x}(-2x^2 + x + 1)} \Rightarrow x = \frac{4x^2 - x + 1}{-2x^2 + x + 1} \Rightarrow 10x^2 - 3x - 1 = 0$$

$$f\left(\frac{1}{p}\right) = \frac{\sqrt{\frac{1}{p}}}{-2\left(\frac{1}{p}\right)^2 + \frac{1}{p} + 1} = \boxed{\frac{\sqrt{p}}{p}}$$

$$f(x) = g(x) \Rightarrow x \Rightarrow 2\sqrt{x}(x^2 + 3) = mx \Rightarrow 2x^2 + 4 = m\sqrt{x}$$

$$f'(x) = g'(x) \Rightarrow 14x = \frac{m}{2\sqrt{x}} \Rightarrow 14x^2 + 4 = 22x^2 \xrightarrow{x \rightarrow 0} x = \frac{1}{p}$$

$$m = 14\sqrt{x}$$

$$x \rightarrow \left(\frac{\sqrt{a}}{x}\right)^+ \Rightarrow \sqrt{x^2 - 1} \rightarrow \left(\frac{1}{x}\right)^+ \Rightarrow g(x) \rightarrow x^+$$

$$(f(g(x)))' = g'\left(\frac{\sqrt{a}}{x}\right) \cdot f'_+(x)$$

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

$$x \rightarrow x^+ \Rightarrow f(x) = (1/x)^2 \Rightarrow f'(x) = -2/x^3 \Rightarrow f'_+(x) = -2/x^3$$

$$(-4\sqrt{a})(94) = 14(-14\sqrt{a})$$