

علاقة خط به نرم $y = ax + 1$ است \Rightarrow

$$\omega = 3a + 1$$

$$a = \frac{1}{3}$$

$$y = \frac{1}{3}x + 1 \Rightarrow f'(x) = \frac{1}{3}$$

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$$m = \frac{1}{3} \Rightarrow y - 1 = \frac{1}{3}(x + 1) \Rightarrow y = \frac{1}{3}(x + 1) + 1$$

$$\sqrt{ax - 1} = \frac{x}{3} + \frac{1}{3} \Rightarrow 9ax - 9 = x^2 + 2x + 1 \Rightarrow x^2 + (1 - 9a)x + 10 = 0$$

$$\Delta = 0 \Rightarrow a = 2 \checkmark \Rightarrow f(x) = 3$$

$$a = -\frac{1}{9} \text{ و } \bar{a} = 2$$

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$$f'(x) = \frac{1}{3}$$

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

$$\left. \begin{array}{l} f'(1) = \frac{1}{3} \\ f'(x) = \frac{x^2 + 4x + 3m - 1}{(x + 3)^2} \end{array} \right\} \frac{1^2 + 4 + 3m - 1}{1 + 6 + 9} = \frac{1}{3} \Rightarrow m = 2$$

$$f(1) = 1$$

$$f(1) - 3(1) = n$$

$$n = 1$$

$$m + n = 3$$

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$$f(x) = \frac{(3 - \sin x)(\sin^2 x + 3 \sin x + 9)}{(3 - \sin x)(\sin x + 3)} = \frac{\sin^2 x + 3 \sin x + 9}{\sin x + 3} = \frac{\sin^2 x}{\sin x + 3} + 3$$

$$3g - f(x) = \frac{9 - \sin^2 x}{\sin x + 3} - 3 = 3 - \sin x - 3 = -\sin x$$

$$(3g - f)'(x) = -\cos x \Rightarrow (3g - f)'(\frac{5\pi}{3}) = \frac{1}{2}$$

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$$g(x) = \frac{1}{2x^5}, \quad f(x) = -\frac{1}{\sqrt[5]{2x}} \Leftrightarrow \circ \langle g(\sqrt[5]{2}) \text{ و } \circ \langle \sqrt[5]{2}$$

$$f \circ g(x) = -x \Rightarrow (f \circ g)'(x) = -1$$

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$$g(x) = \frac{f(x)-1}{x} = \frac{f(x)-f(0)}{x-0} \quad \lim_{x \rightarrow 0} g(x) = f'(0)$$

$$f'(x) = 2 \left(\frac{\sin x - 1}{\sin x + 1} \right) \times \frac{2}{(\sin x + 1)^2} \cdot \cos x \Rightarrow f'(0) = -4$$

دو خطی متمم خطی m هم $y = x^2 + 1$ را در نقطه هم عرض α و β قطع می‌کند.

$$y' = 2x \Rightarrow \left. \begin{array}{l} 2\alpha \cdot 2\beta = -1 \\ \alpha^2 + 1 = \beta^2 + 1 \end{array} \right\} \alpha = \frac{1}{\beta}, \beta = -\frac{1}{\beta} \quad (\alpha = -\beta)$$

$$\Rightarrow m = \frac{5}{4} \Rightarrow d: y = -\frac{5}{4}x \quad \text{نقطه} = \frac{5}{4} \quad \text{خط} d = \text{نسبت به محور} x$$

$$\left. \begin{array}{l} d = mx \quad \text{نقطه تماس } (\alpha, \beta) \\ m\alpha = 2\sqrt{\alpha} (4\alpha^2 + 3) \\ m = \frac{1}{\sqrt{\alpha}} (4\alpha^2 + 3) + 4\alpha \times 2\sqrt{\alpha} \\ m\sqrt{\alpha} = 4\alpha^2 + 3 \end{array} \right\} \begin{array}{l} m\sqrt{\alpha} = 2(4\alpha^2 + 3) \quad \alpha = \frac{1}{4} \checkmark \\ 4\alpha^2 + 3 = 4\alpha^2 + 3 \quad \alpha = -\frac{1}{4} \text{ قوی} \\ m = 1/5 \end{array}$$

چگونگی تابع از نقطه $(0,0)$ می‌گذرد و با توجه به \sqrt{x} ، در صورت تماس نام وارد \leq خط d : $x=0$ و عرض نقطه A نیز صفر است.

$$f'(x) = 2fx^2 \quad f'(1) = 4 \times 2 \times 1 \quad f(x) = \frac{1}{2}x^2 \Rightarrow \left[\frac{\sqrt{5}}{2} \right] = 2$$

$$g'(x) = -\frac{1}{2} (x^2 - 1)^{-\frac{3}{2}} \times 2x \quad g'\left(\frac{\sqrt{5}}{2}\right) = -\frac{1}{2} \times 2 \times \sqrt{5}$$

$$(f \circ g)'\left(\frac{\sqrt{5}}{2}\right) = g'\left(\frac{\sqrt{5}}{2}\right) \times f'(g\left(\frac{\sqrt{5}}{2}\right)) = 2 \times 4 \times (-\sqrt{5}) \quad \text{برابر ۸}$$