

④ برای چند مقدار صحیح نامنفی m ، (a, b) یک نقطه گشوده ای برای معنی است؟

$$f(x) = \begin{cases} b & x < a \\ b + (x-a)^m & x \geq a \end{cases}$$

$$f'(x) \rightarrow 1 + m(x-a)^{m-1} (1)$$

فقط $m=1$ باشد، اگر بیشتر مشتق پذیری شد، در نقطه

⑤ خط $f(x) = \frac{1}{\sqrt{x-|x|}}$ و $g(x) = \frac{1}{x^3 - |x^3|}$ باشد، مقدار $g'(-\sqrt[3]{2}) f'(g(-\sqrt[3]{2}))$

$$(f(g(x)))' = f \circ g'$$

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

$$\frac{f(g(x)) - f(1)}{(g(x))^r} = \frac{f(x) - f(1)}{(x-|x|)^r} \quad x = -1 \rightarrow x - (-x) = 2x$$

$$\frac{-f}{(x-|x|)^r} = \frac{-1}{(x-|x|)^r} \xrightarrow{x=-\sqrt[3]{2}} \frac{-1}{2^r \sqrt[3]{2}}$$

⑥ خط $y = -ax - a$ در نقطه ای به طول ۳ بر محور تقاطع f محاسب است

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

$$f'(x) = -a \quad f(x) = -3a - a$$

$$-a + 3a + a = 2$$

$$2a = -2 \\ a = -\frac{2}{2}$$

$$f(x) = -3 \left(-\frac{2}{2} \right) - a$$

$$\frac{a}{2} - \frac{10}{2} = -\frac{1}{2}$$

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

⑦ $f(x)$ چند برابر $f'(x)$

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

Subject : _____

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مثلاً $g(x) = \frac{1}{\sqrt[3]{x^2-1}}$, $f(x) = \left(x \left[x^2 + \frac{1}{x}\right]\right)^2 + 1$ ⑤
 $g\left(\frac{\sqrt{2}}{\sqrt{2}}\right) = \frac{1}{\sqrt[3]{\frac{2}{2}-1}} = \frac{1}{\sqrt[3]{1}} = 1$ $x=2 \rightarrow (f(x))^2+1 = 14x^2+1$

$(f(g(x)))' = g'(x) \cdot f'(g(x))$ $f'(x) = 4x \rightarrow f'(2) = 8$
 $\text{مثلاً } (-12\sqrt{2})$ $x = \frac{\sqrt{2}}{\sqrt{2}} \rightarrow fog$ مثلاً

$g'(x) = \frac{-\frac{2x}{\sqrt[3]{(x^2-1)^4}}}{\frac{1}{\sqrt[3]{(x^2-1)^4}}} \rightarrow g'\left(\frac{\sqrt{2}}{\sqrt{2}}\right) = \frac{-\frac{2}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = \frac{-2}{1} = -2$

$(fog)' = \frac{-2 \times 8}{-12\sqrt{2}} = \frac{16}{12\sqrt{2}} = \frac{4}{3\sqrt{2}}$ ⑥

$g(x) = f(x+1) + f(3x+10)$, $f'(-1) = \frac{3}{x}$ مثلاً $\omega = f \text{ حيث } \omega$ ⑦

$g'(x) = f'(x+1) + 3f'(3x+10)$ $f'(-1) = f'(4)$ $\leftarrow g'(-2) = ?$

$g'(-2) = f'(-1) + 3f'(4)$

$g'(-2) = \frac{3}{-1} + 3\left(\frac{3}{4}\right) = \frac{-3+9}{4} = \frac{6}{4} = \frac{3}{2}$

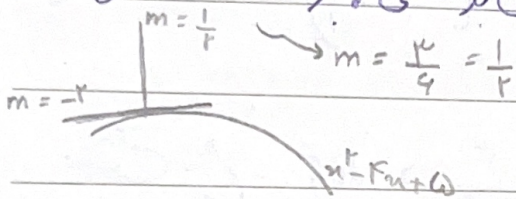
$\lim_{h \rightarrow 0} \frac{f^2(\omega-h) - 3f(\omega-h) + 2}{h(\omega-h)}$ مثلاً $f(x) = (x-4)\sqrt[3]{x+4}$ ⑧

Hop $\frac{2f(\omega-h)(-1)f'(\omega-h) + 3f(\omega-h)f'(\omega-h)}{-2h + \omega} = \frac{-2f(\omega)f'(\omega) + 3f(\omega)f'(\omega)}{\omega}$

$\frac{f(\omega)f'(\omega)}{\omega} = \frac{4 \times \frac{10}{16}}{4} = \frac{10}{16} = \frac{5}{8}$

$f(\omega) = 4$
 $f'(x) = \sqrt[3]{x+4} + \frac{(x-4)}{3\sqrt[3]{(x+4)^2}} \Rightarrow f'(\omega) = 2 + \frac{1}{3} = \frac{7}{3}$

4y - 3m = 1 ... $y = x^2 - 4m + 2$... (10)



$$2m - 4 = -2$$

$$2m = 2 \quad m = 1 \quad y = 1 - 4 + 2 = -1$$

$$(1, -1)$$