$f = x^{۳} + ax - b \qquad y=0$

$f'(x) = ۳a^{۲} + a \qquad y'=0$

$f(۲)=0 = ۸ + ۲a - b \qquad \overbrace{۸-۲۴}^{-۱۶} = b$

$f'(۲)=0 = ۱۲ + a \qquad a = -۱۲$

$-۱۶ + ۱۲ = \boxed{-۴}$ ۶

$f'(x) : n\left(\cos(x^{۲})\,۲x\right)\left(\sin^{n-1}(x^{۲})\right)$ ۷

$f^{-1}\Big|_{۹}^{۲} \qquad f\Big|_{۲}^{۹}$

$\frac{\sqrt{x}+1}{\sqrt{x}-1} = ۲ \qquad \sqrt{x}+1 = ۲\sqrt{x} - ۲ \qquad \sqrt{x} = ۳ \quad x=۹$

$\frac{1}{m} \qquad m$

$f(x) = \frac{\sqrt{x}-1}{\sqrt{x}-1} + \frac{۲}{\sqrt{x}-1}$

$1 + ۲(\sqrt{x}-1)^{-1}$

$f'(x) = \frac{-۲\left(\frac{1}{۲\sqrt{x}}\right)}{(\sqrt{x}-1)^{۲}} = \frac{-\frac{1}{۳}}{۲\times۲} = -\frac{1}{۱۲} = m \Rightarrow \boxed{\frac{1}{m} = -۱۲}$ ۸

$\frac{f(0) - f(-1)}{0+1} = -۱۱$

$1 - ۸(1-a) = -۱۲$

$۸(1-a) = +\frac{۳}{۲}$

$a = -\frac{1}{۴}$

$f'(-۲\times\frac{1}{۲}) = f'(1)$

$f'(x) = ۳(۲x)(x^{۲}+1)^{۲}(-\frac{1}{۲}x+1) + (-\frac{1}{۲})(x^{۲}+1)^{۳} = ۸$

$f = \sin x \cos ۲x$

$g = (\sin^{۲} - \cos^{۲})(\cancel{\sin^{۲} + \cos^{۲}})^{1}$

$\sin^{۲} - \cos^{۲} = -\cos ۲x$

$$\frac{\frac{f(\frac{\pi}{۴}) - f(\frac{\pi}{۲})}{\cancel{\frac{\pi}{۴}-\frac{\pi}{۲}}}}{\frac{g(\frac{\pi}{۴}) - g(\frac{\pi}{۲})}{\cancel{\frac{\pi}{۴}-\frac{\pi}{۲}}}} = \frac{f(\frac{\pi}{۴}) - f(\frac{\pi}{۲})}{g(\frac{\pi}{۴}) - g(\frac{\pi}{۲})}$$ ۱۰

$$\frac{\sin(\frac{\pi}{۴})\overbrace{\cos(\frac{\pi}{۲})}^{0} - \overbrace{\sin(\frac{\pi}{۲})}^{1}\overbrace{\cos(\pi)}^{-1}}{-\underbrace{\cos(\frac{\pi}{۲})}_{0} + \underbrace{\cos(\pi)}_{-1}} = -1$$

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$g(x) = f(\cancel{\ }\tan^2 + \sqrt{2}\cos)$ $g'(x) = f'(\cancel{\ }\tan^2 + \sqrt{2}\cos)(2(1+\tan^2)\tan - \sqrt{2}\sin)$ $g'(\frac{\pi}{4}) = f'(2)\left(\underbrace{\cancel{2(1+1)(1) - \sqrt{2}\times\frac{\sqrt{2}}{2}}}_{3}\right) = \sqrt{3}$ $f'(2) = \frac{\sqrt{3}}{3}$	۱
$f = \frac{\cancel{(2+\cos)}(4+\cos^2+2\cos)}{\cancel{(2+\cos)}(2-\cos)}$ $\quad g = \frac{2}{2-\cos}$ $(\cos+1)^2+3$ $f'(x) = \frac{(2-\cos)(-2\sin) - (\sin)((\cos+1)^2+3)}{(2-\cos)^2}$ $\quad -2g' = \frac{+4(+\sin)}{(2-\cos)^2}$ $\quad \sin(\frac{7\pi}{6}) = -\frac{1}{2}$ $\quad \cos(\frac{7\pi}{6}) = -\frac{\sqrt{3}}{2}$ $-(\cos^2+4)$ $\quad (5-\sin^2)$ $f'-2g' = \frac{\sin}{(2-\cos)^2}\left(2(\cos-2) - \overbrace{(\cos+1)^2 \cancel{-3+4}}^{1}\right) = \frac{-\sin(\cancel{\cos^2+4})}{(2-\cos)^2} = \frac{-\frac{1}{2}(5-\frac{1}{4})}{(\frac{4+\sqrt{3}}{2})^2} = \frac{\frac{19}{42}}{\frac{19+8\sqrt{3}}{\cancel{2}}}$	۲
$\lim_{x\to\frac{3}{4}} \frac{\|4x-3\|\sqrt{ax}}{(x-\frac{3}{4})}$ $\to +4\sqrt{3a}$, $\to -2\sqrt{3a}$ $2\times 2\sqrt{3a} = 2\sqrt{6}$ $\sqrt{a} = \frac{\sqrt{2}}{2}$ $a = \frac{1}{2}$	۳
$f(4) = -4a+2$ $\quad y = -ax+2$ $f'(4) = -a$ $\quad y' = -a$ $\underbrace{f+f'}_{-1} = -5a+2$ $-3 = -5a$ $\quad a = \frac{3}{5}$ $\quad f'(\cancel{\ }) = -\frac{3}{5}$	۴
$y = \frac{1}{7}x + \frac{5}{7}$ $\quad y = \frac{ax-1}{3x+1}$ $\quad 3x^2+16x+5 = 7ax-7 \longrightarrow \Delta = 0$ $y' = \frac{1}{7}$ $\quad y' = \frac{a+3}{(3x+1)^2}$ $\quad 3x^2+(16-7a)x+12 = 0$ $(16-7a)^2 = 4(3)(12) = 0$ $\cancel{16}-7a = 12$ $\quad \boxed{a = -\frac{4}{7}}$	۵