3y $f(x) = \frac{1}{\sqrt{x}}$ $a = \frac{1}{4}$

$$\lim_{x\to a} \frac{f(x)-f(a)}{x-a}$$

$$\lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$$

$$\lim_{x\to a} \frac{\frac{\sqrt{a}}{\sqrt{a}}\frac{1}{\sqrt{x}} - \frac{1}{\sqrt{a}}\frac{\sqrt{x}}{\sqrt{x}}}{x-a}$$

$$\lim_{x\to a} \frac{\frac{\sqrt{a}-\sqrt{x}}{\sqrt{ax}}\,(\sqrt{a}+\sqrt{x})}{(x-a)(\sqrt{a}+\sqrt{x})}$$

$$\lim_{x\to a} \frac{-(x-a)}{\sqrt{ax}(\sqrt{a}+\sqrt{x})} \cdot \frac{1}{x-a}$$

$$\lim_{x\to a} \frac{-1}{\sqrt{ax}(\sqrt{a}+\sqrt{x})}$$

$$= \frac{-1}{a(\sqrt{a}+\sqrt{a})} = \frac{-1}{2a\sqrt{a}}$$

$f(1/4) = \frac{1}{\sqrt{1/4}} = \frac{1}{\frac{1}{2}} = 2$

$(1/4, 2)$

$m = \frac{-1}{2(\frac{1}{4})\sqrt{1/4}} = \frac{-1}{\frac{1}{2}\cdot\frac{1}{2}} = \frac{-1}{\frac{1}{4}} = -4$

$y - 2 = -4(x - 1/4)$

$y - 2 = -4x + 1$

$\boxed{y = -4x + 3}$

h/ $f(x) = \sin x(2\csc x - \cot x)$

$= \sin x\left(2\frac{1}{\sin x} - \frac{\cos x}{\sin x}\right)$

$= \sin x\left(\frac{2-\cos x}{\sin x}\right)$

$f(x) = 2 - \cos x$

$f'(x) = \sin x$

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