Good afternoon: warm up

Find f'(3) if $f(x)=\operatorname{arcsec}(x^2)$

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

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

$$f'(3)=\frac{6}{9\sqrt{80}}\rightarrow\frac{2}{3\sqrt{80}}$$

$$\frac{d}{dx}\operatorname{arcsec}(x)=\frac{1}{|x|\sqrt{x^2-1}}$$

$$\frac{d}{dx}\operatorname{arccsc}(x)=\frac{1}{|x|\sqrt{x^2-1}}$$

$$\frac{2}{3\cdot 4\sqrt{5}}$$

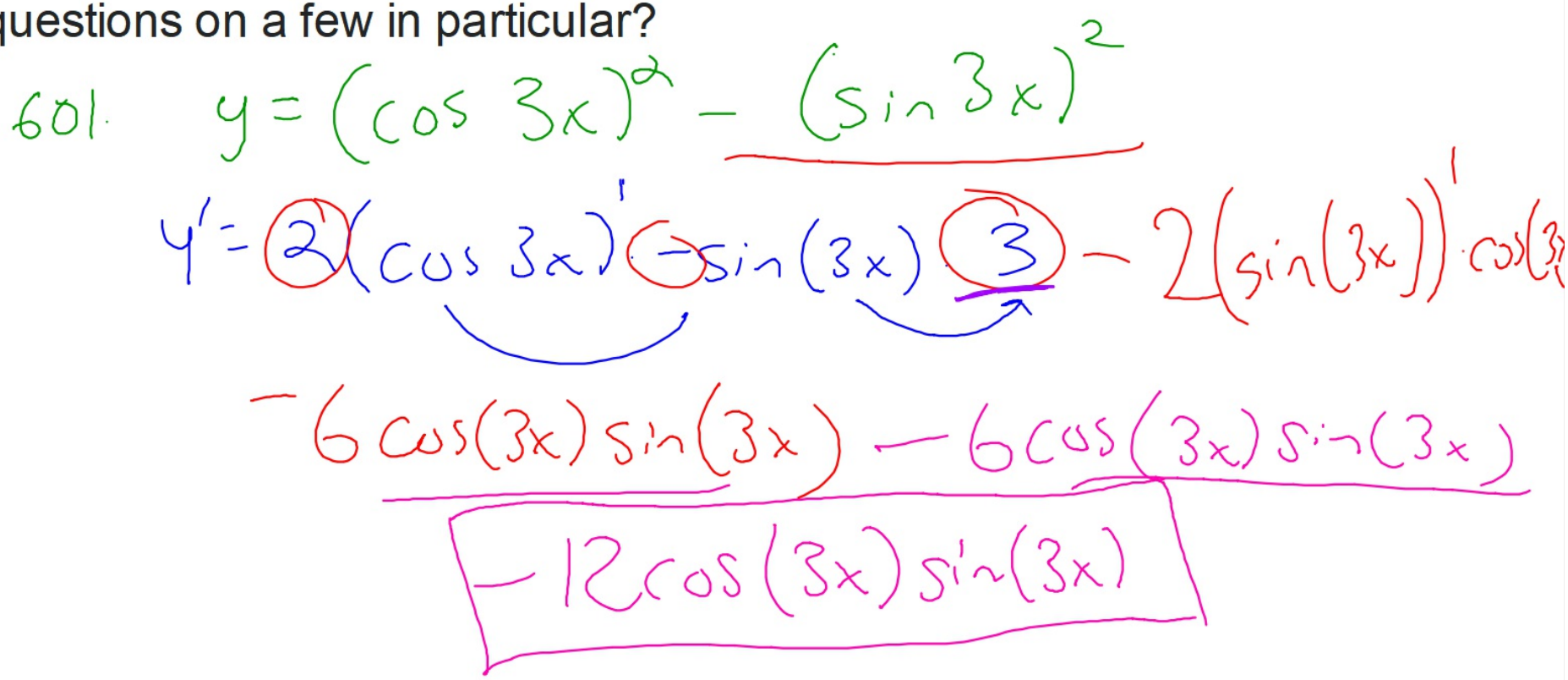
$$\frac{2}{12\sqrt{5}}$$

$$\frac{1}{6\sqrt{5}}$$

HW

answers posted to mcalc.weebly.com

questions on a few in particular?



584) $B(x) = \dfrac{x-2}{\ln x}$

597) $y = \dfrac{\cot(5x)}{3x^2}$

Low Dhi − Hi d:low / Low·Low

$$\frac{dy}{dx} = \frac{-\csc^2(5x)\cdot 5\cdot 3x^2 - \cot(5x)\cdot 6x}{9x^4}$$

$$\frac{-15x^2\csc^2(5x) - 6x\cdot\cot(5x)}{9x^4}$$

$$\frac{-5x\cdot\csc^2(5x) - 2\cot(5x)}{3x^3}$$

A return to differentiability

Why is $y = \sqrt[5]{3x}$ not differentiable at x=0?

Is this continuous? yes. odd radical

ex $y = \sqrt[4]{3x}$ doesn't accept neg.

Is its derivative cont.?

$y = (3x)^{1/5}$

No. Not cont. @ x=0

$\frac{dy}{dx} = ?$

$= \frac{1}{5}(3x)^{-4/5} \cdot 3$

$\frac{3}{5}(3x)^{-4/5} \rightarrow \frac{3}{5(3x)^{4/5}} \rightarrow \frac{3}{5\sqrt[5]{(3x)^4}}$

$x \neq 0$

Show why each is nondifferentiable at x=0

$f(x) = \sqrt[3]{4x^2} = (4x^2)^{1/3}$ f is cont.

$f'(x) = \frac{1}{3}(4x^2)^{-2/3} \cdot 8x$

$f'(x) \quad \frac{8x}{3\sqrt[3]{(4x^2)^2}}$

$x = 0$ gives you $\frac{8 \cdot 0}{3 \cdot 0} = \frac{0}{0}$ ③

f'(x) is not cont.

So f is not diff

cont.

$g(x) = -|x| + 5$

$g(x) = \begin{cases} x+5, & x \le 0 \\ -x+5, & x > 0 \end{cases}$

$|x| \Rightarrow \begin{cases} x, & x \ge 0 \\ -x, & x < 0 \end{cases}$

$g'(x) = \begin{cases} 1, & x < \\ -1 & x > \end{cases}$

Not cont.