LAST NAME: FIRST NAME: KEY

Math 008B - Spring 2016

Quiz 4: Wednesday May 11, 2016

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1. (5 points) Differentitate:

$$y = \tan^2(8x)$$

$$\frac{dy}{dx} = \frac{d}{dx}(\tan(8x))^2$$

$$= 2\tan(8x)(\tan(8x))'$$

$$= 2\tan(8x)\sec^2(8x)(8x)'$$

$$= \boxed{16\tan(8x)\sec^2(8x)}$$

Please show all work.

2. (5 points) Find $\frac{dy}{dx}$ by implicit differentiation.

$$y\sin(x^2) = x\sin(y^2)$$

$$\frac{dy}{dx}\sin(x^2) + y\cos(x^2)\cdot 2x = \sin(y^2) + x\cos(y^2)\cdot 2y\frac{dy}{dx}$$

$$\Rightarrow \frac{dy}{dx}\sin(x^2) - \frac{dy}{dx}\cdot 2xy\cos(y^2) = \sin(y^2) - 2xy\cos(x^2)$$

$$\Rightarrow \frac{dy}{dx}\left(\sin(x^2) - 2xy\cos(y^2)\right) = \sin(y^2) - 2xy\cos(x^2)$$

$$\Rightarrow \boxed{\frac{dy}{dx} = \frac{\sin(y^2) - 2xy\cos(x^2)}{\sin(x^2) - 2xy\cos(y^2)}}$$

Please show all work.