

Instructions: Show all work and simplify your answers! Correct answers without work will receive zero points. Also, points will be taken from messy solutions. **Good Luck!** ☺

Compute the following derivative.

1. $f(x) = \tan(x)$

$$f'(x) = \sec^2 x$$

2. $f(x) = \cos(3x)$

$$f'(x) = -3 \sin(3x)$$

3. $f(x) = e^{\sin(x)}$

$$f'(x) = \cos(x) e^{\sin(x)}$$

4. $f(x) = \sqrt{1+x^2} = (1+x^2)^{1/2}$

$$\begin{aligned} f'(x) &= \frac{1}{2} (1+x^2)^{-1/2} (2x) \\ &= \frac{x}{\sqrt{1+x^2}} \end{aligned}$$