

Name: _____

Math 106

Quiz #2

February 5, 2018

• This is a closed-book quiz. No books, notes, calculators, cell phones, communication devices of any sort, or webpages, or other aids are permitted.

1. [5 points] Differentiate each of the following functions. Do **not** simplify your answer.

(a) $f(x) = \sqrt{\cos\left(\frac{1}{x}\right)}$

(b) $f(x) = (\sec x + 1) \sin x$

2. [5 points] Consider $f(x) = \frac{\sin x}{1 + \cos x}$. Compute $f'(x)$. **Simplify** your answer.

3. [10 points] The top of a ten foot ladder is sliding down a vertical wall at the rate of one foot every second. Consider the angle formed by the bottom of the ladder and the ground. How fast is this angle changing when the top of the ladder is five feet above the ground?

4. [5 points] Let $f(x) = \sin x + \cos(2x)$. Compute $f'\left(\frac{\pi}{6}\right)$. Simplify your answer completely.