

# Math 2215 - Calculus 1

Exam #2 - 2016.09.16

Name: \_\_\_\_\_

1. Compute the following derivative:

$$\frac{d}{dx} \frac{2}{\sin(3x)}$$

2. Compute the following derivative:

$$\frac{d}{dx} \cos^3(x^2)$$

3. Compute the following derivative:

$$\frac{d}{d\theta} (\sin(\tan(3\theta^2 + 1)) - \theta)$$

4. Compute the following derivative:

$$\frac{d}{dz} \sqrt[4]{x + \sqrt[5]{x + \sqrt[3]{x + 1}}}$$

5. Consider the implicitly defined function given by the equation:

$$y^2x + y^2 = x^2 - x$$

Find *all* the points  $(x, y)$  on the curve at which there is a *vertical* tangent line.

6. State the Mean Value Theorem.

7. Compute the following derivative:

$$\frac{d}{dw} \frac{\sin(2w) \cos(w) + \sec(3w)}{1 + \tan(4w)}$$

8. The following is a graph of  $f'(x)$ , sketch  $f(x)$  on the same graph.

