

Math 103, Fall 2014  
Week 5

After Class Homework  
Due Monday, October 6

1. Suppose that the function

$$g(x) = \begin{cases} bx^2 - bx + e & \text{if } x < 1 \\ e^x & \text{if } x \geq 1 \end{cases}$$

is differentiable everywhere. What is  $b$ ?

2. Find  $\frac{d}{dx}(3x^2 + 7xe^x)$
3. Find  $\frac{d}{dz}((z^2 - 4)(z^2 + 4))$
4. Find  $\frac{d}{dx} \frac{e^x}{x^3 + x}$