CALCULUS I
FALL 2015

WRITTEN ASSIGNMENT 8
DUE SEPTEMBER 30

Exercise 1. Let $f(x) = xe^{-x}$.

a. Compute the first three derivatives of f. At each stage, simplify as much as possible. Do you notice a pattern?

b. Compute $f^{(1800)}(x)$.

Exercise 2.

Suppose that f and g are differentiable. Use the Chain Rule and the Product Rule (only!) to show that

$$\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{f'(x)g(x) - g'(x)f(x)}{[g(x)]^2}.$$