

Quiz Date: August 28, 2017

**Instructions:** The following exercises are similar to those found in the course text book. This homework is not due for a grade, but you should know how to do all of them and be able to show your work for each. You can expect at least one of these problems to appear on an in-class quiz on the date listed above.

## 1 5.5 - The Substitution Rule

1. Evaluate the integral by making the given substitution.

a.  $\int x^3(2 + x^4)^5 dx, \quad u = 2 + x^4$

b.  $\int \frac{\sec^2(\frac{1}{x})}{x^2} dx, \quad u = \frac{1}{x}$

2. Evaluate the indefinite integral.

a.  $\int x^2 e^{x^3} dx$

c.  $\int \frac{x}{1 + x^4} dx$

b.  $\int \frac{\sin(\sqrt{x})}{\sqrt{x}} dx$

3. Evaluate the definite integral.

a.  $\int_0^3 \frac{1}{5x + 1} dx$

b.  $\int_0^{\pi/2} \cos(x) \sin(\sin(x)) dx$

## 2 6.1 - Integration by Parts

4. Evaluate the integral.

a.  $\int p^5 \ln(p) dp$

c.  $\int_4^9 \frac{\ln(y)}{\sqrt{y}} dy$

b.  $\int \sin^{-1}(x) dx$

d.  $\int t^2 e^t dt$

5. First make a substitution, then use integration by parts to evaluate the integral.

a.  $\int t^3 e^{-t^2} dt$

b.  $\int_1^4 e^{\sqrt{x}} dx$