Quiz Date: September 13, 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.

# 6.4 - Integration with Tables and Computer Algebra Systems

**1.** Use the equation

$$\boxed{\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln\left|\frac{u-a}{u+a}\right| + C}$$

to evaluate the integral

$$\int \frac{\cos x}{\sin^2 x - 9}\, dx.$$

**2.** Use the equation

$$\boxed{\int \frac{\sqrt{u^2 - a^2}}{u^2}\, du = -\frac{\sqrt{u^2 - a^2}}{u} + \ln\left|u + \sqrt{u^2 - a^2}\right| + C}$$

to evaluate the integral

$$\int \frac{\sqrt{2y^2 - 3}}{y^2}\, dy.$$

**3.** Use the equation

$$\boxed{\int \frac{u^2}{\sqrt{a^2 - u^2}}\, du = -\frac{u}{2}\sqrt{a^2 - u^2} + \frac{a^2}{2} \arcsin\left(\frac{u}{a}\right) + C}$$

to evaluate the integral

$$\int \arcsin(\sqrt{x})\, dx.$$

# 6.5 - Approximate Integration

**4.** Use the Midpoint Rule to estimate $\displaystyle\int_0^2 \frac{1}{1+x^6}\, dx$ using $n = 4$ intervals.

**5.** Use the Trapezoid Rule to estimate $\displaystyle\int_0^2 \frac{1}{1+x^6}\, dx$ using $n = 4$ intervals.

**6.** Use Simpson's Rule to estimate $\displaystyle\int_0^2 \frac{1}{1+x^6}\, dx$ using $n = 4$ intervals.