

ASE 211 Homework 11

Due: Friday, April 14 at 12:00 p.m.

1. Consider the following integral:

$$\int_0^{.9} \left[ z^n \arccos(z) - \frac{z^{n+1}}{(n+1)\sqrt{1-z^2}} \right] dz$$

The actual value of this integral is

$$\frac{z^{n+1}}{n+1} \arccos(z) \Big|_0^{.9}.$$

Using either matlab or working by hand, apply the composite trapezoidal rule and the composite Simpson's rule to the approximation of the integral above for  $n = 2$ . Use the composite formulas with  $N = 2$ ,  $N = 4$  and  $N = 8$ .