

**APPM 5600: Homework #4**  
**Due in class Wednesday October 18**

**1** Atkinson Chapter 3, problem 3.

**2** Atkinson Chapter 3, problem 11.

**3** Atkinson Chapter 3, problem 12.

**4**

- (a) Give an explicit expression for the minimal-degree polynomial  $p(x)$  that interpolates  $f(x) = 1/(1+x^2)$  at the points  $x_0 = -z, x_1 = 0, x_2 = z$ .
- (b) Give an explicit expression for the value of  $z$  that leads to the minimum value of  $\sqrt{\int_{-1}^1 (f(x) - p(x))^2 dx}$ .
- (c) Apply a rootfinding method of your choice to compute a numerical value for the  $z$  from part (b). Describe your algorithm and give its result.