Homework 2

MATH 5610 FALL 2016

NAME: GRADE:_____

Problem 1. Implement a code that will produce the absolute error in the approximation of one real number by another real number. Also, implement a code that will compute the absolute error in the approximation of one complex number by another. Do the same for the relative error. Make sure that you check the values in the relative error case. That is, when the numbers are close to zero. You should end up with four very simple routines. Verify your codes against the table. on page 3 of the textbook. Build examples that verify your code written for complex numbers. Note this will produce 4 self-contained methods/functions/subroutines for your software manual.

Problem 2. Implement codes that compute:

a. the Euclidean length of a vector of real numbers of variable length,

b. the l_1 norm of a vector of real numbers of variable length, and

c. the l_∞ norm of a vector of real numbers of variable length,

Note this will produce 3 self contained methods/functions/subroutines for your software manual. Verify that your codes work for at least 3 vectors.

Problem 3. Implement codes that compute:

a. the dot product two vectors of the same variable length, and

b. the cross product two vectors of the same variable length.

Note this will produce 2 self contained methods/functions/subroutines for your software manual. Verify that your codes work for at least 3 vectors.

Problem 4. Complete Problem 1. at the end of Chapter 2 in the textbook.

Problem 5. Complete Problem 2. at the end of Chapter 2 in the textbook.

Problem 6. Complete Problem 6. at the end of Chapter 2 in the textbook.

Problem 7. Complete Problem 11. at the end of Chapter 2 in the textbook.

Problem 8. Complete Problem 13. at the end of Chapter 2 in the textbook.

Problem 9. Complete Problem 14. at the end of Chapter 2 in the textbook.

Problem 10. Complete Problem 15. at the end of Chapter 2 in the textbook.
