Appendix C - Turn-in Sheet

Problem 1: OUT OF RANGE ERROR

Please turn in a program that shows what the largest factorial number you can exactly calculate.

The largest factorial that can be represented with regular `int` type is 33.

The largest factorial that can be represented with a `long int` type is 65.

Problem 2: ROUND-OFF ERROR

Please turn in the program you wrote to calculate the values in the following chart.

Using a `float`

x1 = -0.001 %error from actual root = -0.0000047497

x2 = -3000 %error from actual root = -0

Using a `double`

x1 = -0.001 %error from actual root = 0.0000000024

x2 = -3000 %error from actual root = -0

Given the fact that each root can easily be represented in a float. Why do you think that there was error using the floating point? Be as specific as you can. You might write your answer on the back of this sheet.

Problem 3: TRUNCATION ERROR

How many terms do you need to include in the power series expansion until the digital value remains unchanged?

answer for `float` type: 11

answer for `double` type: 18

Problem 4: ERROR PUZZLE

What is the error for the summing the first 100 terms in the power series from largest to smallest.

answer for `float` type: 2.718281984329223632 8125

answer for `double` type: 2.718281828459045534884808148490265011787414550781 25

What is the error for the summing the first 100 terms in the power series from smallest to largest.

answer for `float` type: 2.71828174591064453125

answer for `double` type: 2.718281828459045090795598298427648842334747314453 12

Why do you think it makes a difference as to whether you sum forward or backwards?

ANS: I am not sure. I am guessing that it is because of the way the program adds different values using double or float.