COT 3100 Fall 2017 Homework #4
Please Consult WebCourses for the due date/time

1) Find the greatest common divisor of each of the following pairs of integers using the Euclidean Algorithm:

      a) 123 and 63   c) 131 and 108   e) 1111 and 111

      b) 979 and 782   d) 923 and 7238   f) 555 and 330

2) Determine 108^{-1} mod 131. (Note: You can use your work from question 1c if you'd like.)

3) Without the use of a calculator determine the remainder when 47^{37} is divided by 51. Please show all of your steps by hand and utilize one of the two methods shown in class.

4) Prove or disprove: if p and q are prime numbers then pq - 2 is also a prime number.

5) Find the least common multiple of each pair of numbers from question 1. Use your results from question 1.

      a) 123 and 63   c) 131 and 108   e) 1111 and 111

      b) 979 and 782   d) 923 and 7238   f) 555 and 330

6) Determine the number of divisors that each of the following integers have:

      a) 96   c) 267   e) 625040

      b) 108   d) 289   f) 698112

7) Give a summary of the life and mathematical contributions of Sophie Germain. Please aim for a length of roughly 200 - 400 words. ***Your summary must be typed.*** Please state the sources you used in writing your summary.