History of Mathematics 3010
Homework Assignment 5
Due Monday 11/20/2017

Your Name (Print in block letters):

Decode the following message which was sent using $n = 7081$ and $k = 1789$.

5192, 2604, 4222

Follow the outlined steps.

1. (4 points) Factor $n$ as a product of primes. Find $\varphi(n)$. This requires some trial and error.

2. (6 points) Using Euclidean algorithm find positive integers $j, v$ such that

$$-v \varphi(n) + jk = 1$$

3. (10 points) Decode the message. You will need the number $j$. You will have to rise 5192, 2604 and 4222 to the power $j$ modulo $n$.

To do it you can use either the successive squaring method, or a program (like Phyton, Java, or whatever you are familiar with).