Assignment 6

- 1. Using the fact that $4 \times 15 = 60$, solve the equation $15x + 12 \equiv 3 \mod 59$. Your solution should be a number x computed "modulo 59". It should be an integer between 0 and 58.
- 2. Find the first power of 3 that is congruent to 1 modulo 11, and use this information to find out the value of $3^{2014} \mod 11$.
- 3. True or False: If n is a composite, then there are x,y such that $x\not\equiv 0 \bmod n$ and $y\not\equiv 0 \bmod n$ but $xy\equiv 0 \bmod n$.
- 4. True or False: For every prime p > 3 the equation $x^2 + 1 \equiv 0 \mod p$ has a solution.
- 5. Find an x such that $x = 10 \mod 13$ and $x = 5 \mod 59$.