Homework Assignment 4
March 29, 2019

1. Use Shank's Algorithm to compute $\log_7(12)$ in $(\mathbb{Z}/41\mathbb{Z})^*$.

2. Use the Chinese Remainder Theorem to compute a solution to $13x \equiv 3 \pmod{70}$.

3. Determine whether the following congruences have a solution. In case, find a solution:

   (a) $x^2 \equiv 58 \pmod{69}$;
   (b) $x^2 \equiv 12 \pmod{85}$;
   (c) $x^2 \equiv 2 \pmod{107}$.

4. (Challenge) Find three consecutive integers satisfying the following property: the first has a divisor of the form a^4, the second has a divisor of the form b^5 and the third has a divisor of the form c^6, for some a, b and c different from 1.