

Homework 14, due October 7

- (1) (Page 105, problem 10) A group of people are arranging themselves for a parade. If they line up three to a row, one person is left over. If they line up four to a row, two people are left over, and if they line up five to a row, three people are left over. What is the smallest possible number of people?

- (2) Find the smallest nonnegative solution to the system of congruences

$$19x \equiv 103 \pmod{900},$$

$$10x \equiv 511 \pmod{841}.$$

- (3) Use fast modular exponentiation to compute $3^{75} \pmod{103}$ by hand. Show each step as on page 79 of the text.