MATH 113: DISCRETE STRUCTURES
HOMEWORK 36

Problem 1. Use Sunzi's Theorem to efficiently compute the congruence class of 17^2 modulo 35 as follows: First compute $17^2 \pmod 7$ and $17^2 \pmod 5$. Next, solve a system of congruences that will give you the answer.

Problem 2. Describe *all* integer solutions to the system of congruences:

$$\begin{aligned} x &= 1 \pmod 3 \\ x &= 2 \pmod 4 \\ x &= 3 \pmod 5. \end{aligned}$$

Problem 3. Find integers $x, y \in \{0, 1, 2, \ldots, 7\}$ satisfying

$$\begin{aligned} x + 5y &= 7 \pmod 8 \\ 3x + y &= 1 \pmod 8. \end{aligned}$$