

- [1] 1. (**Bonus**) Write down your name (first and last.)

Solve **one** of the following two problems: (10 points for either)

- [10] 2. Let $A = \{0, 1, 2, 3, 4, 5, 6, 7, 8\}$, and define an equivalence relation on A by

$$a \sim b \text{ if and only if } a^2 \equiv b^2 \pmod{9}.$$

Prove that \sim is an equivalence relation on A , and determine the distinct equivalence classes of \sim .

- [10] 3. Write down the modular arithmetic addition and multiplication tables for \mathbb{Z}_7 .