Definition 1. Suppose that n is an integer. Declare that two integers a and b are *congruent modulo* n if $n|a-b$.

Problem 2. Which of the following integers is not congruent to 1 modulo 12?

A) -13 B) -11 C) 1 D) 13 E) 145

Solution. A) □

Problem 3. Let R be congruence modulo 7 on the set $\{x \in \mathbb{Z} : 0 \leq x < 100\}$. Compute the number of equivalence classes of this equivalence relation.

A) 1 B) 3 C) 7 D) 14 E) 100

Solution. C) □

Problem 4. Let R be congruence modulo 7 on the set $\{x \in \mathbb{Z} : 0 \leq x < 100\}$. Compute the size of the equivalence class of 3.

A) 1 B) 3 C) 7 D) 14 E) 100

Solution. D) □

Problem 5. Assume that n is an integer and $n > 1$. How many equivalence classes does congruence modulo n have (on the integers)?

A) 0 B) 1 C) n D) 2^n E) ∞

Solution. C) □