

Homework 1

Due: In class on Wednesday September 29th

Problem 1: Exercise 1.2.8 from Lecture Notes

Problem 2: Prove the following properties about congruences:

If $a \equiv b \pmod{m}$ and $c \equiv d \pmod{m}$ then

- (i) $a + c \equiv b + d \pmod{m}$
- (ii) $ac \equiv bd \pmod{m}$
- (iii) $a^n \equiv b^n \pmod{m} \forall n$
- (iv) $a + x \equiv b + x \pmod{m} \forall x$
- (v) $ax \equiv bx \pmod{m} \forall x$
- (vi) $a - x \equiv b - x \pmod{m} \forall x$