

Assignment 6

Due Friday, Nov 3, 06 at 1:00 PM in Class

Remarks: I may not grade all assignments, and not all questions/parts will be graded on the graded assignment. You're welcome to ask me for help. Show your work and explain every step.

- (1) Solve in $\mathbb{Z}_6$: $4x = 4$.
- (2) Solve in $\mathbb{Z}_{80}$: $4x = 8$.
- (3) Solve $(4x + 4)(x + 3) \equiv 0 \pmod{6}$.
- (4) Solve the following system in $\mathbb{Z}_4$:
$$x + y = 1.$$
$$x + 3y = 1.$$
- (5) Find $\gcd(36, 25)$ and write it as a linear combination of 36 and 25.
- (6) Find the multiplicative inverse of 25 in $\mathbb{Z}_{36}$.
- (7) Find the canonical factorization of $(104125)^{900}$.