

## Assignment for Tuesday, 4/9/0 & Thursday, 4/12

### Exercises from the book

Section 9.2  $\rightarrow$  #3, 4a, 5, 7, 8b, 11a, 12, 14b, 16a, 17.

Section 9.3  $\rightarrow$  #2, 3b, ~~3~~, 4, 5b, 6, 7, 8, 9, 10a, 11, 12ab, 15.

[Also, try #17, 18, and 19 later.]

### Supplementary Exercises

(30) Let  $p$  be an odd prime with  $\gcd(a, p) = 1$ .  
Let  $d = \gcd(m, p-1)$ .

Prove that:  $x^m \equiv a \pmod{p}$  is solvable

$$a^{(p-1)/d} \equiv 1 \pmod{p}$$

[Note this is a generalization of Euler's criterion for  $m^{\text{th}}$  power residues of a prime.]