

Math 255 - Spring 2018  
Homework 8

This homework is due on Monday, March 26.

1. Solve each of the following congruences of the form  $ax \equiv \text{ (mod } m)$ . For each equation, be sure to list **all** distinct solutions modulo  $m$ .

(a)  $2x \equiv 1 \pmod{17}$

(b)  $6x \equiv 15 \pmod{21}$

(c)  $36x \equiv 8 \pmod{102}$

(d)  $4x \equiv 8 \pmod{18}$

(e)  $20x \equiv 984 \pmod{1984}$

Extra problem for graduate credit:

2. Let  $a$  and  $b$  be positive integers. How many multiples of  $b$  are in the sequence

$$a, 2a, 3a, \dots, ba?$$