

Math 255 - Spring 2022
Single linear congruences
15 points

This homework invites you to solve single linear congruence problems. Students taking this class for graduate credit are only required to answer problem 2 (though they are welcome to answer both problems of course).

1. (10 points) Solve each of the following congruences of the form $ax \equiv c \pmod{m}$. For each equation, be sure to list **all** distinct solutions modulo m .

(a) $5x \equiv 2 \pmod{26}$

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

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

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

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

2. (5 points) Let a and b be positive integers. How many multiples of b are in the sequence

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