



INTRO TO ABSTRACT MATHEMATICS  
SPRING 2020

ASSIGNMENT 6.1  
DUE MARCH 4

**Exercise 1.** Let  $m, n \in \mathbb{N}$ . Prove that if  $n \geq 2$ , then  $n$  cannot divide both  $m$  and  $m + 1$ .

**Exercise 2.** Let  $a, b, c \in \mathbb{Z}$ .

- a. Prove that if  $a + b + c$  is even, then  $a$  is even,  $b$  is even or  $c$  is even.
- b. Prove that if  $ab$  is even, then  $a$  is even or  $b$  is even.

**Exercise 3.** Let  $a, b, c \in \mathbb{Z}$  be odd. Prove that the equation  $ax^2 + bx + c = 0$  does not have a rational solution.