

## Math 417: Homework 2

Due Friday, September 10, 2021

1. Goodman, exercise 1.6.3.
2. Goodman, exercise 1.6.4.
3. Goodman, exercise 1.6.8.
4. For each of the following equations, either find a pair of integers  $(x, y)$  that makes the equation true, or show that no such pair exists.
  - (a)  $64x + 76y = 1$ .
  - (b)  $64x + 76y = 2$ .
  - (c)  $64x + 76y = 4$ .
  - (d)  $64x + 76y = 8$ .
5. In the lecture notes it was shown that if a prime number  $p$  divides a product  $ab$  of two nonzero integers, then  $p$  divides one of the factors. Using that statement, show that if a prime number  $p$  divides a product  $a_1 a_2 \cdots a_r$  of several nonzero integers, then it divides one of the factors.
6. Goodman, exercise 1.7.1.
7. Goodman, exercise 1.7.2.
8. Goodman, exercise 1.7.3.
9. Goodman, exercise 1.7.4.