

# Worksheet 8

Math 392, Abstract Algebra

Wednesday, January 27, 2021

**§4.3 #1.** Apply the Euclidean algorithm in  $\mathbb{Z}[i]$  to find  $\gcd(z, w)$ .

(Don't feel that you have to finish this – once you've got the hang of the division algorithm you can go on to #2.)

(If you wrote your final project on this last quarter, you can help explain things to your colleagues, and use your program to check their answers.)

a.  $z = 8 + 6i, w = 5 - 15i$ .

b.  $z = 4 - i, w = 1 + i$ .

c.  $z = 16 + 7i, w = 10 - 5i$ .

**§4.3 #2.** Factor each one as a product of irreducible elements in  $\mathbb{Z}[i]$ .

a. 6

b.  $11 + 7i$

c. 7

d.  $4 + 3i$