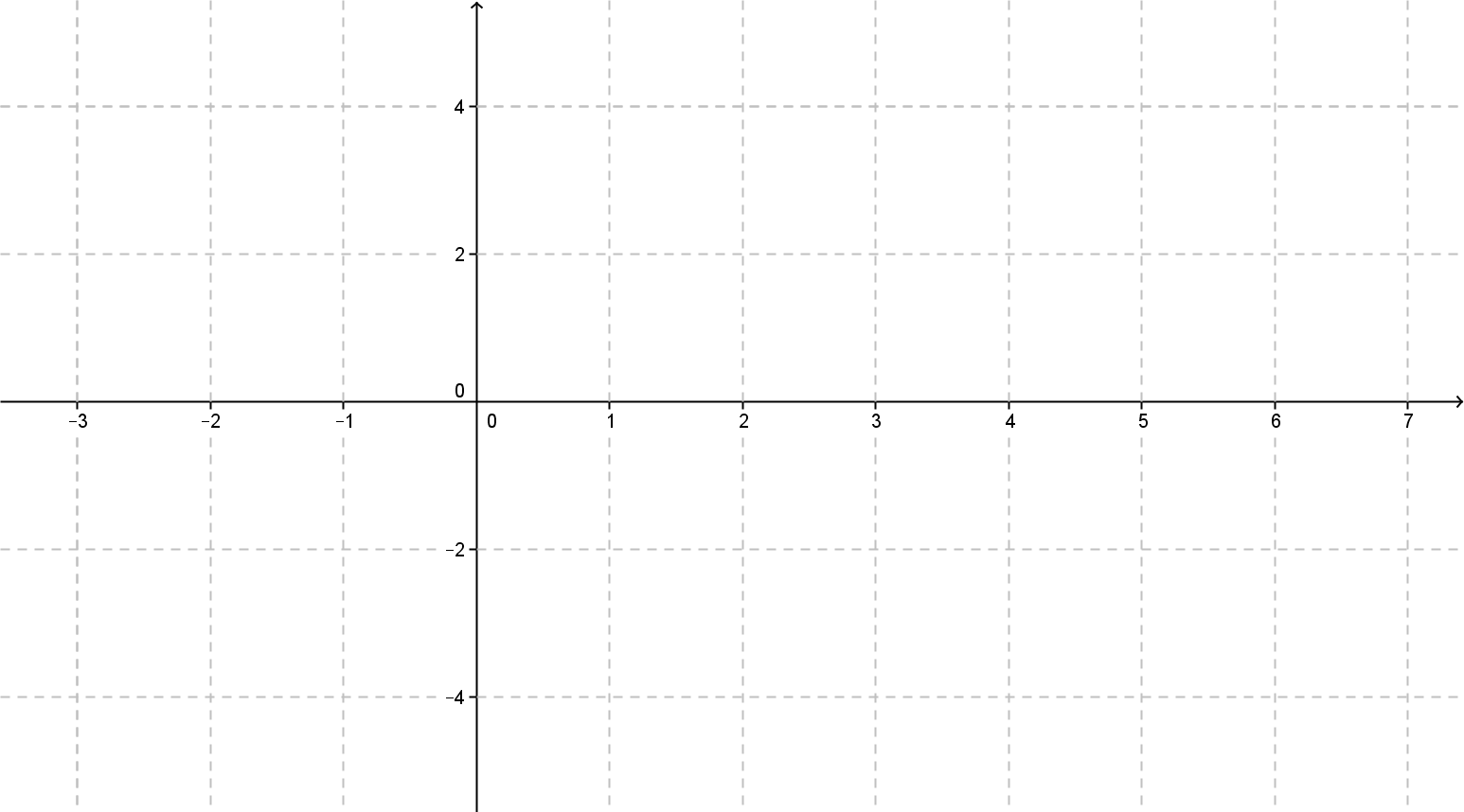
Lesson 8: Complex Number Division

Classwork

Opening Exercises

Use the general formula to find the multiplicative inverse of each complex number.

Exercises 1–4

Find the conjugate, and plot the complex number and its conjugate in the complex plane. Label the conjugate with a prime symbol.

1. :
2. :
3. :
4. :

Exercises 5–8

Find the modulus.

Exercises 9–11

Given .

1. Show that for all complex numbers , .
2. Show that for all complex numbers , .
3. Explain the following: Every nonzero complex number has a multiplicative inverse. It is given by .

**Example 1**

Exercises 12–13

Divide.

Problem Set

1. Let and. Show that

   2. If, must it be that ?
   3. Give a specific example to show that usually does not equal .
2. Divide.
3. Prove that for complex numbers and .
4. Given , .
   1. Find , and graph , , and on the same complex plane. Explain what you discover if you draw line segments from the origin to those points ,, and . Then draw line segments to connect to , and to .
   2. Find , and graph , , and on the same complex plane. Explain what you discover if you draw line segments from the origin to those points ,, and . Then draw line segments to connect to , and to .
5. Explain why and geometrically. (Hint: Triangle inequality theorem)