

Practice 2.1: Imaginary & Complex Numbers

1. Write the first 12 powers of i . ($i^1 =, i^2 =, i^3 =, \dots$)

2. Find the values of the following powers of i .

a. i^{40}

b. i^{55}

c. i^{102}

d. i^{361}

3. Write as complex numbers in standard form ($a + bi$).

a. $4 + \sqrt{-9}$

b. $7 - \sqrt{-25}$

c. 19

d. $\sqrt{-32}$

4. Simplify. Write the answer in standard form.

a. $(4 + 3i) + (7 + 5i)$

b. $(3 + 2i) - (6 - 5i)$

5. Write the complex conjugate of each complex number.

a. $8 + 9i$

b. $2 - 11i$

c. $-5 + \sqrt{-16}$

d. $12i$

6. Simplify. Write the answer in standard form.

a. $\sqrt{-4} \cdot \sqrt{-49}$

b. $(\sqrt{-20})^2$

c. $-3(5 + 7i)$

d. $4i(6 - 8i)$

6. -cont.

e. $(5 + 2i)(6 + 4i)$

f. $(4 + 2i)(4 - 2i)$

g. $(2 - 5i)^2$

h. $\frac{3}{2+9i}$

i. $\frac{3+5i}{4-2i}$

j. $\frac{5+9i}{6i}$

7. Graph & label the following complex numbers.

a. $4 + 2i$

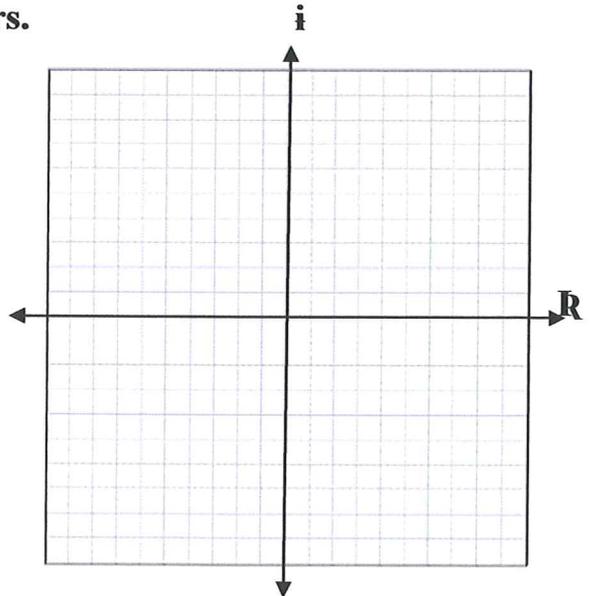
b. $7 - 5i$

c. $-6 - 8i$

d. $-9 + 4i$

e. 3

f. $6i$



8. What kind of number will the sum of a complex number and its conjugate be?

9. What kind of number will the difference to a complex number and its conjugate always be?