

**3.2** Notetaking with Vocabulary (continued)**Sums and Differences of Complex Numbers**

To add (or subtract) two complex numbers, add (or subtract) their real parts and their imaginary parts separately.

**Sum of complex numbers:**  $(a + bi) + (c + di) = (a + c) + (b + d)i$

**Difference of complex numbers:**  $(a + bi) - (c + di) = (a - c) + (b - d)i$

**Notes:**

**Extra Practice**

In Exercises 1–6, find the square root of the number.

1.  $\sqrt{-49}$

2.  $\sqrt{-4}$

3.  $\sqrt{-45}$

4.  $-2\sqrt{-100}$

5.  $6\sqrt{-121}$

6.  $5\sqrt{-75}$

In Exercises 7 and 8, find the values of  $x$  and  $y$  that satisfy the equation.

7.  $-10x + i = 30 - yi$

8.  $44 - \frac{1}{2}yi = -\frac{1}{4}x - 7i$

**3.2** Notetaking with Vocabulary (continued)

In Exercises 9–14, simplify the expression. Then classify the result as a *real number* or *imaginary number*. If the result is an *imaginary number*, specify if it is a *pure imaginary number*.

9.  $(-8 + 3i) + (-1 - 2i)$

10.  $(36 - 3i) - (12 + 24i)$

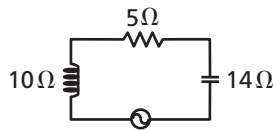
11.  $(16 + i) + (-16 - 8i)$

12.  $(-5 - 5i) - (-6 - 6i)$

13.  $(-1 + 9i)(15 - i)$

14.  $(13 + i)(13 - i)$

15. Find the impedance of the series circuit.



In Exercises 16–18, solve the equation. Check your solution(s).

16.  $0 = 5x^2 + 25$

17.  $x^2 - 10 = -18$

18.  $-\frac{1}{3}x^2 = \frac{1}{5} + \frac{4}{3}x^2$

19. Sketch a graph of a function that has two real zeros at  $-2$  and  $2$ . Then sketch a graph on the same grid of a function that has two imaginary zeros of  $-2i$  and  $2i$ . Explain the difference in the graphs of the two functions.

