Lesson 18 Practice Problems

1. Clare solves the quadratic equation $4x^2 + 12x + 58 = 0$, but when she checks her answer, she realizes she made a mistake. Explain what Clare's mistake was.

$$x = \frac{-12 \pm \sqrt{12^2 - 4 \cdot 4 \cdot 58}}{2 \cdot 4}$$

$$x = \frac{-12 \pm \sqrt{144 - 928}}{8}$$

$$x = \frac{-12 \pm \sqrt{-784}}{8}$$

$$x = \frac{-12 \pm 28i}{8}$$

$$x = -1.5 \pm 28i$$

2. Write in the form $a + bi$, where a and b are real numbers:

a. $\frac{5 \pm \sqrt{-4}}{3}$

b. $\frac{10 \pm \sqrt{-16}}{2}$

c. $\frac{-3 \pm \sqrt{-144}}{6}$

3. Priya is using the quadratic formula to solve two different quadratic equations.

For the first equation, she writes $x = \frac{4 \pm \sqrt{16-72}}{12}$

For the second equation, she writes $x = \frac{8 \pm \sqrt{64-24}}{6}$

Which equation(s) will have real solutions? Which equation(s) will have non-real solutions? Explain how you know.

4. Find the exact solution(s) to each of these equations, or explain why there is no solution.

a. $x^2 = 25$

b. $x^3 = 27$

c. $x^2 = 12$

d. $x^3 = 12$

(From Unit 3, Lesson 8.)

5. Kiran is solving the equation $\sqrt{x+2} - 5 = 11$ and decides to start by squaring both sides. Which equation results if Kiran squares both sides as his first step?

    A. $x + 2 - 25 = 121$

    B. $x + 2 + 25 = 121$

    C. $x + 2 - 10\sqrt{x+2} + 25 = 121$

    D. $x + 2 + 10\sqrt{x+2} + 25 = 121$

(From Unit 3, Lesson 9.)

6. Plot each number on the real or imaginary number line.
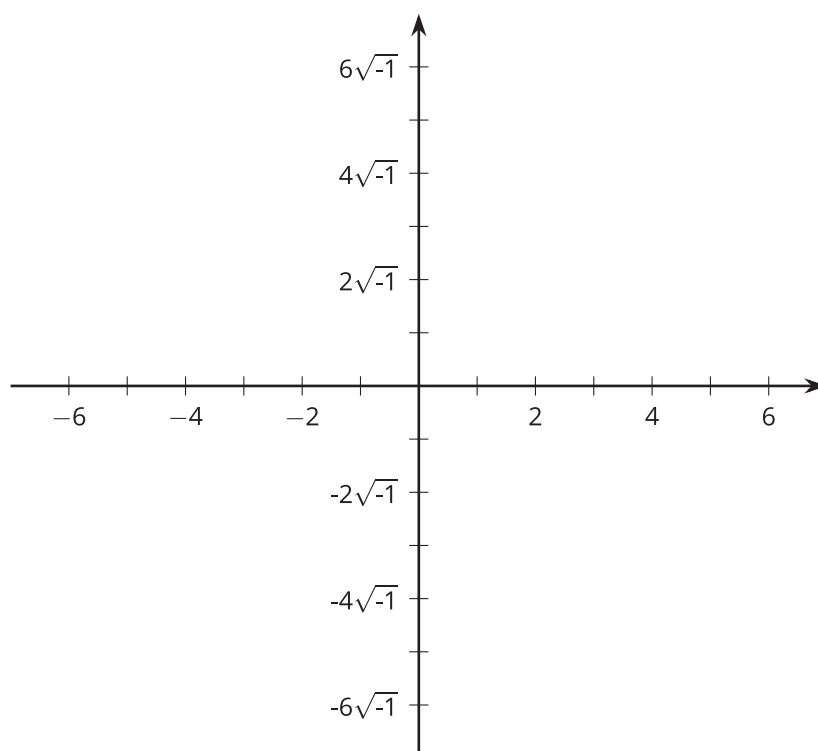
a. $-\sqrt{4}$

b. $\sqrt{-1}$

c. $3\sqrt{4}$

d. $-3\sqrt{-1}$

e. $4\sqrt{-1}$

f. $2\sqrt{2}$

(From Unit 3, Lesson 10.)