Lesson 16 Practice Problems

1. What number should be added to the expression $x^2 - 15x$ to result in an expression equivalent to a perfect square?

   A. -7.5

   B. 7.5

   C. -56.25

   D. 56.25

2. Noah uses the quadratic formula to solve the equation $2x^2 + 3x - 5 = 4$. He finds $x = -2.5$ or 1. But, when he checks his answer, he finds that neither -2.5 nor 1 are solutions to the equation. Here are his steps:

   $a = 2, b = 3, c = -5$

   $x = \frac{-3 \pm \sqrt{3^2 - 4 \cdot 2 \cdot -5}}{2 \cdot 2}$

   $x = \frac{-3 \pm \sqrt{49}}{4}$

   $x = -2.5$ or 1

   a. Explain what Noah's mistake was.

   b. Solve the equation correctly.

3. Solve each quadratic equation with the method of your choice.

a. $x^2 - 2x = -1$

b. $x^2 + 8x + 14 = 23$

c. $x^2 - 15 = 0$

d. $7x^2 - 2x - 5 = 0$

e. $2x^2 + 12x = 8$

4. What are the solutions to the equation $x^2 - 4x = -3$?

A. $\frac{4 \pm \sqrt{16 - 4 \cdot 0 \cdot -3}}{2 \cdot 0}$

B. $\frac{4 \pm \sqrt{16 - 4 \cdot 1 \cdot -3}}{2 \cdot 1}$

C. $\frac{4 \pm \sqrt{16 - 4 \cdot 1 \cdot 3}}{2 \cdot 1}$

D. $\frac{-4 \pm \sqrt{16 - 4 \cdot 1 \cdot 3}}{2 \cdot 1}$

5. Which expression is equivalent to $\sqrt{-23}$?

   A. $-23i$

   B. $23i$

   C. $-i\sqrt{23}$

   D. $i\sqrt{23}$

(From Unit 3, Lesson 11.)

6. Write each expression in the form $a + bi$, where a and b are real numbers.

   a. $5i^2$

   b. $i^2 \cdot i^2$

   c. $(-3i)^2$

   d. $7 \cdot 4i$

   e. $(5 + 4i) - (-3 + 2i)$

(From Unit 3, Lesson 12.)

7. Let $m = (7 - 2i)$ and $k = 3i$. Write each expression in the form $a + bi$, where a and b are real numbers.

   a. $k - m$

   b. k^2

   c. m^2

   d. $k \cdot m$

(From Unit 3, Lesson 13.)