

UNIT 3 • MODELING AND ANALYZING QUADRATIC FUNCTIONS**Lesson 1: Creating and Solving Quadratic Equations in One Variable****Practice 3.1.6: Completing the Square****A**

For problems 1–4, find the value of c so that the expression is a perfect square trinomial.

1. $x^2 + 18x + c$

2. $x^2 - 24x + c$

3. $x^2 + 15x + c$

4. $x^2 + x + c$

Solve problems 5–7 by completing the square.

5. $x^2 + 10x = 0$

6. $x^2 + 12x - 13 = 0$

7. $3x^2 + 2x - 7 = 0$

Use what you know about completing the square to solve problems 8–10. Determine whether your answers are reasonable and explain why or why not.

8. A rectangular porch has an area of 75 square feet. The length of the porch is 4 feet longer than the width. What is the width of the porch?
9. A pet owner throws a tennis ball for his dog to chase. The tennis ball's height in feet after it is thrown upward is given by $-16x^2 + 32x + 4$, where x represents the time in seconds after the ball was thrown. After how many seconds will the ball hit the ground?
10. The fuel economy in miles per gallon of a certain vehicle is given by $-0.01x^2 + 1.2x - 5.8$, where x is the car's speed in miles per hour. For what speed(s) does the car have a fuel economy of 22 miles per gallon?