

9.4 Practice A

In Exercises 1–3, find the value of c that completes the square.

1. $x^2 - 6x + c$

2. $x^2 - 10x + c$

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

In Exercises 4–6, complete the square for the expression. Then factor the trinomial.

4. $x^2 - 4x$

5. $x^2 - 20x$

6. $x^2 + 26x$

In Exercises 7–9, solve the equation by completing the square. Round your answers to the nearest hundredth, if necessary.

7. $x^2 + 8x = 6$

8. $x^2 - 12x = -11$

9. $x^2 + 18x = 7$

10. A rectangular kitchen has an area of 160 square feet. The length is 12 feet more than the width.

- Write an equation that represents the area of the kitchen.
- Find the dimensions of the kitchen by completing the square.

In Exercises 11–16, solve the equation by completing the square. Round your answers to the nearest hundredth, if necessary.

11. $x^2 - 6x + 18 = 0$

12. $x^2 + 2x - 15 = 0$

13. $2x^2 - 16x + 20 = 0$

14. $3x^2 + 24x + 21 = 0$

15. $-4x^2 - 16x + 19 = -17$

16. $-2x^2 + 12x + 16 = 22$

17. You are completing the square to solve $5x^2 + 30x = 45$. What is the first step?

In Exercises 18–21, determine whether the quadratic function has a maximum or minimum value. Then find the value.

18. $y = x^2 - 6x - 4$

19. $y = x^2 + 8x + 10$

20. $y = -x^2 - 14x - 20$

21. $y = 2x^2 + 12x - 22$

22. The product of two consecutive even integers that are negative is 224.

- Write an equation to find the integers.
- Find the two integers.

9.4 Practice B

In Exercises 1–3, find the value of c that completes the square.

1. $x^2 - 16x + c$

2. $x^2 - x + c$

3. $x^2 + 7x + c$

In Exercises 4–6, complete the square for the expression. Then factor the trinomial.

4. $x^2 - 14x$

5. $x^2 + 30x$

6. $x^2 - 9x$

In Exercises 7–9, solve the equation by completing the square. Round your answers to the nearest hundredth, if necessary.

7. $x^2 + 10x = 16$

8. $x^2 - 3x = 7$

9. $x^2 + 15x = 12$

10. A wading pool is 1 foot deep and has a volume of 108 cubic feet. The width is 12 feet less than the length.

a. Write an equation that represents the volume of the wading pool.

b. Find the dimensions of the wading pool by completing the square.

In Exercises 11–16, solve the equation by completing the square. Round your answers to the nearest hundredth, if necessary.

11. $x^2 - 10x + 17 = 0$

12. $x^2 + 22x + 25 = 0$

13. $3x^2 - 15x + 27 = 0$

14. $2x^2 + 40x + 32 = 0$

15. $-3x^2 - 12x - 10 = -37$

16. $5x^2 - 15x - 10 = 20$

17. Find all values of b for which $x^2 + bx + 49$ is a perfect square.

In Exercises 18–21, determine whether the quadratic function has a maximum or minimum value. Then find the value.

18. $y = x^2 - 6x + 4$

19. $y = 2x^2 + 16x - 7$

20. $y = -3x^2 - 15x - 21$

21. $y = 5x^2 - 20x + 25$

22. The product of two consecutive odd integers that are positive is 323.

a. Write an equation to find the integers.

b. Find the two integers.