



2-5 Additional Practice

Completing the Square

Use square roots to solve quadratic equations and find the solutions to the following equations.

1. $x^2 + 12x + 36 = 25$

2. $x^2 - 10x + 25 = 144$

3. $x^2 + 6x + 9 = \frac{49}{4}$

4. $x^2 - 22x + 121 = 225$

Rewrite the equations in the form $(x - p)^2 = q$

5. $x^2 + 4x + 3 = 0$

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

Solve each quadratic equation by completing the square.

7. $x^2 + 10x - 1 = 0$

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

9. $-x^2 + 6x + 10 = 0$

10. $x^2 + 5x = 3x + 11$

Write each equation in vertex form.

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

12. $y = x^2 + 14x + 50$

13. $y = 3x^2 + 8x + 2$

14. $y = -2x^2 + 6x - 2$

15. The quadratic equation $d = -t^2 + 4t + 33$ models the depth of water, d , in feet in a flood channel t hours after a rainstorm.

a. Solve the equation $-t^2 + 4t + 33 = 0$.

b. Approximate the positive solution found in part (a) to two decimal places.

c. Interpret the answer to part (b) in terms of the problem.

16. While in orbit, a space scientist measures the pressure inside a container as it is being heated and then cooled. She records the information and discovers the pressure, p , in pounds per square inch, is related to the time, t , in minutes after the experiment began according to the equation $p = -0.2t^2 + 1.6t$. Complete the square in the expression $-0.2t^2 + 1.6t$.