



Practice

5.4 Completing the Square

Complete the square for each quadratic expression in order to form a perfect-square trinomial. Then write the new expression as a binomial squared.

1. $x^2 + 24x$ _____

2. $x^2 - 40x$ _____

3. $x^2 - 20x$ _____

4. $x^2 + 5x$ _____

5. $x^2 + 9x$ _____

6. $x^2 - 19x$ _____

Solve by completing the square. Round your answers to the nearest tenth, if necessary.

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

8. $x^2 - 8x + 13 = 0$

9. $x^2 - 14x - 1 = 0$

10. $x^2 + 20x = 3$

11. $x^2 + 1 = 5x$

12. $x^2 - 4 = 6x$

13. $2x^2 - 13 = 2x$

14. $x^2 + 7x + 2 = 0$

15. $2x^2 + 16x = 3$

Write each quadratic function in vertex form. Find the coordinates of the vertex and the equation of the axis of symmetry.

16. $f(x) = -\frac{1}{2}x^2$

17. $f(x) = 7 - 3x^2$

18. $f(x) = x^2 - 12x - 3$

19. $f(x) = x^2 - 2x - 10$

20. $f(x) = x^2 - 10x - 10$

21. $f(x) = 3x^2 + 15x - 2$
