EXAMPLES 2, 4, and 5 on pp. 276–278 for Exs. 29–34

EXERCISES

Write the expression as a complex number in standard form.

29. $-9i(2 - i)$

30. $(5 + i)(4 - 2i)$

31. $(2 - 5i)(2 + 5i)$

32. $(8 - 6i) + (7 + 4i)$

33. $(2 - 3i) - (6 - 5i)$

34. $\dfrac{4i}{-3 + 6i}$

4.7 Complete the Square

pp. 284–291

EXAMPLE

Solve $x^2 - 8x + 13 = 0$ by completing the square.

$x^2 - 8x + 13 = 0$ — **Write original equation.**

$x^2 - 8x = -13$ — **Write left side in the form $x^2 + bx$.**

$x^2 - 8x + \mathbf{16} = -13 + \mathbf{16}$ — **Add $\left(\frac{-8}{2}\right)^2 = (-4)^2 = 16$ to each side.**

$(x - 4)^2 = 3$ — **Write left side as a binomial squared.**

$x - 4 = \pm\sqrt{3}$ — **Take square roots of each side.**

$x = 4 \pm \sqrt{3}$ — **Solve for x.**

EXAMPLES 3 and 4 on pp. 285–286 for Exs. 35–37

EXERCISES

Solve the equation by completing the square.

35. $x^2 - 6x - 15 = 0$

36. $3x^2 - 12x + 1 = 0$

37. $x^2 + 3x - 1 = 0$

4.8 Use the Quadratic Formula and the Discriminant

pp. 292–299

EXAMPLE

Solve $3x^2 + 6x = -2$.

$3x^2 + 6x = -2$ — **Write original equation.**

$3x^2 + 6x + 2 = 0$ — **Write in standard form.**

$x = \dfrac{-6 \pm \sqrt{6^2 - 4(3)(2)}}{2(3)}$ — **Use $a = 3$, $b = 6$, and $c = 2$ in quadratic formula.**

$x = \dfrac{-3 \pm \sqrt{3}}{3}$ — **Simplify.**

EXAMPLES 1, 2, 3, and 5 on pp. 292–295 for Exs. 38–41

EXERCISES

Use the quadratic formula to solve the equation.

38. $x^2 + 4x - 3 = 0$

39. $9x^2 = -6x - 1$

40. $6x^2 - 8x = -3$

41. VOLLEYBALL A person spikes a volleyball over a net when the ball is 9 feet above the ground. The volleyball has an initial vertical velocity of −40 feet per second. The volleyball is allowed to fall to the ground. How long is the ball in the air after it is spiked?