10 CHAPTER REVIEW

10.4 Use Square Roots to Solve Quadratic Equations

pp. 652–658

EXAMPLE

Solve $5(x - 6)^2 = 30$. Round the solutions to the nearest hundredth.

$5(x - 6)^2 = 30$ — Write original equation.

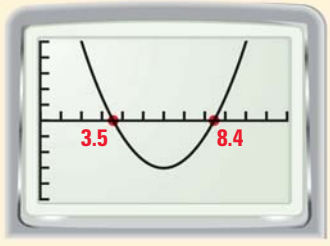
$(x - 6)^2 = 6$ — Divide each side by 5.

$x - 6 = \pm\sqrt{6}$ — Take square roots of each side.

$x = 6 \pm \sqrt{6}$ — Add 6 to each side.

▸ The roots of the equation are $6 + \sqrt{6} \approx 8.45$ and $6 - \sqrt{6} \approx 3.55$.

CHECK To check the solutions, first rewrite the equation so that 0 is on the one side as follows: $5(x - 6)^2 - 30 = 0$. Then graph the related function $y = 5(x - 6)^2 - 30$. The x-intercepts are about 8.4 and about 3.5. So, each solution checks.



EXERCISES

Solve the equation. Round your solutions to the nearest hundredth, if necessary.

EXAMPLES 1–4 on p. 652–654 for Exs. 14–19

14. $6x^2 - 54 = 0$

15. $3x^2 + 7 = 4$

16. $g^2 + 11 = 24$

17. $7n^2 + 5 = 9$

18. $2(a + 7)^2 = 34$

19. $3(w - 4)^2 = 5$

10.5 Solve Quadratic Equations by Completing the Square

pp. 663–668

EXAMPLE

Solve $3x^2 + 12x = 18$ by completing the square.

$3x^2 + 12x = 18$ — Write original equation.

$x^2 + 4x = 6$ — Divide each side by 3.

$x^2 + 4x + 2^2 = 6 + 2^2$ — Add $\left(\frac{4}{2}\right)^2$, or 2^2, to each side.

$(x + 2)^2 = 10$ — Write left side as the square of a binomial.

$x + 2 = \pm\sqrt{10}$ — Take square roots of each side.

$x = -2 \pm \sqrt{10}$ — Subtract 2 from each side.

▸ The solutions of the equation are $-2 + \sqrt{10} \approx 1.16$ and $-2 - \sqrt{10} \approx -5.16$.