

**9-9**  
EXERCISES

**Chapter 9**  
Quadratic Functions and Equations

Homework Help Online

Online Support for Lesson 9-9 Homework

**GUIDED PRACTICE**

Click a video icon to see a Lesson Tutorial Video. Click a pencil icon to practice similar problems.



VIDEO

**See Example 1**

Solve using the Quadratic Formula.

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

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

4.  $x^2 - 6x - 7 = 0$

5.  $x^2 = -14x - 40$

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

7.  $4x^2 - 4x - 3 = 0$



PRACTICE



VIDEO

**See Example 2**

8.  $2x^2 - 6 = 0$

9.  $x^2 + 6x + 3 = 0$

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

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

12.  $x^2 - 4x - 7 = 0$

13.  $2x^2 + x - 5 = 0$



PRACTICE



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PRACTICE

### See Example 3

Find the number of solutions of each equation using the discriminant.

14.  $2x^2 + 4x + 3 = 0$

15.  $x^2 + 4x + 4 = 0$

16.  $2x^2 - 11x + 6 = 0$

17.  $x^2 + x + 1 = 0$

18.  $3x^2 = 5x - 1$

19.  $-2x + 3 = 2x^2$

20.  $2x^2 + 12x = -18$

21.  $5x^2 + 3x = -4$

22.  $8x = 1 - x^2$



VIDEO



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### See Example 4

23. **Hobbies** The height above the ground in meters of a model rocket on a particular launch can be modeled by the equation  $h = -4.9t^2 + 102t + 100$ , where  $t$  is the time in seconds after its engine burns out 100 m above the ground. Will the rocket reach a height of 600 m? Use the discriminant to explain your answer.



VIDEO

**See Example 5**

Solve. Show your work.

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

25.  $x^2 + 6x + 9 = 0$

26.  $2x^2 - x - 1 = 0$

27.  $4x^2 + 4x + 1 = 0$

28.  $2x^2 + x - 7 = 0$

29.  $9 = 2x^2 + 3x$



PRACTICE

**PRACTICE AND PROBLEM SOLVING**

Click a video icon to see a Lesson Tutorial Video. Click a lightbulb icon to see a complete solution.



VIDEO

Solve using the Quadratic Formula.

30.  $3x^2 = 13x - 4$

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

32.  $1 = 3x^2 + 2x$



VIDEO

33.  $x^2 - 4x + 1 = 0$

34.  $3x^2 - 5 = 0$

35.  $2x^2 + 7x = -4$



VIDEO

Find the number of solutions of each equation using the discriminant.

36.  $3x^2 - 6x + 3 = 0$

37.  $x^2 - 3x - 8 = 0$

38.  $7x^2 + 6x + 2 = 0$



VIDEO

39. **Multi-Step** A gymnast who can stretch her arms up to reach 6 feet jumps straight up on a trampoline. The height of her feet above the trampoline can be modeled by the equation  $h = -16x^2 + 12x$ , where  $x$  is the time in seconds after her jump. Do the gymnast's hands reach a height of 10 feet above the trampoline? Use the discriminant to explain. (*Hint*: Let  $h = 10 - 6$ , or 4.)



VIDEO

Solve. Show your work.

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

41.  $x^2 + 2x = 15$

42.  $x^2 - 12 = -x$



Write each equation in standard form. Use the discriminant to determine the number of solutions. Then find any real solutions using the Quadratic Formula.

43.  $2x = 3 + 2x^2$



45.  $2 = 7x + 4x^2$



47.  $-12x = -9x^2 - 4$



47.  $-12x = -9x^2 - 4$



**Multi-Step** Use the discriminant to determine the number of  $x$ -intercepts. Then use the Quadratic Formula to find them.

49.  $y = 2x^2 - x - 21$



51.  $y = x^2 - 10x + 25$