

## 4-5

## Practice

Form G

## Quadratic Equations

Solve each equation by factoring. Check your answers.

1.  $x^2 - 2x - 24 = 0$

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

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

4.  $3x^2 + 45 = 24x$

5.  $4x^2 + 6x = 0$

6.  $7x^2 = 21x$

7.  $(x + 2)^2 = 49$

8.  $x + 3 = 24x^2$

Solve each equation using tables. Give each answer to at most two decimal places.

9.  $5x^2 + 7x - 6 = 0$

10.  $x^2 - 2x = 1$

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

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

13.  $3x^2 + 7x = 1$

14.  $2x^2 - 3x = 15$

Solve each equation by graphing. Give each answer to at most two decimal places.

15.  $10x^2 = 4 - 3x$

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

17.  $4x^2 - x = 6$

18.  $4x^2 + 3x = 6 - 2x$

19.  $x^2 + 4 = 6x$

20.  $5 - x = \frac{1}{2}x^2$

21. A woman drops a front door key to her husband from their apartment window several stories above the ground. The function  $h = -16t^2 + 64$  gives the height  $h$  of the key in feet,  $t$  seconds after she releases it.

- How long does it take the key to reach the ground?
- What are the reasonable domain and range for the function  $h$ ?

## 4-5

**Practice** (continued)

Form G

**Quadratic Equations**

22. The function  $C = 75x + 2600$  gives the cost, in dollars, for a small company to manufacture  $x$  items. The function  $R = 225x - x^2$  gives the revenue, also in dollars, for selling  $x$  items. How many items should the company produce so that the cost and revenue are equal?
23. The function  $a = 2.4t - 0.1t^2$  gives the amount  $a$ , in micromilligrams (mmg), of a drug in a patient's bloodstream  $t$  hours after being ingested in tablet form. When is the amount of the drug equal to 8 mmg? (*Hint*: Multiply the equation you write by 10 before solving.)
24. You use a rectangular piece of cardboard measuring 20 in. by 30 in. to construct a box. You cut squares with sides  $x$  in. from each corner of the piece of cardboard and then fold up the sides to form the bottom.
- Write a function  $A$  representing the area of the base of the box in terms of  $x$ .
  - What is a reasonable domain for the function  $A$ ?
  - Write an equation if the area of the base must be 416 in.<sup>2</sup>.
  - Solve the equation in part (c) for values of  $x$  in the reasonable domain.
  - What are the dimensions of the base of the box?

**Solve each equation by factoring, using tables, or by graphing. If necessary, round your answer to the nearest hundredth.**

25.  $9x^2 = 49$

26.  $x^2 + 10x + 17 = 0$

27.  $4x^2 + 1 = 8x$

28.  $5x^2 - 2x - 7 = 0$

29.  $4(x^2 - x) = 19$

30.  $25x^2 + 20x + 4 = 0$

31.  $3x^2 = 4x + 32$

32.  $x^2 - 5x - 12 = 0$