Name_____ Class_____ Date_____

4-7 Practice

Form G

The Quadratic Formula

Solve each equation using the Quadratic Formula.

1. $x^2 - 8x + 15 = 0$

2. $x^2 + 12x + 35 = 0$

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

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

5. $x^2 + 16 = 8x$

6. $x^2 = 4x - 1$

7. $x(2x - 5) = 12$

8. $-3x^2 - 8x + 16 = 0$

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

10. $x^2 + 10x + 22 = 0$

11. $4x(x + 1) = 7$

12. $x(2x - 3) = 9$

13. The principal at a high school is planning a concert to raise money for the music programs. He determines the profit p from ticket sales depends on the price t of a ticket according to the equation $p = -200t^2 + 3600t - 6400$. All amounts are in dollars. If the goal is to raise \$8500, what is the smallest amount the school should charge for a ticket to the concert?

14. The equation $y = x^2 - 12x + 45$ models the number of books y sold in a bookstore x days after an award-winning author appeared at an autograph-signing reception. What was the first day that at least 100 copies of the book were sold?

15. The height of the tide measured at a seaside community varies according to the number of hours t after midnight. If the height h, in feet, is currently give by the equation $h = -\frac{1}{2}t^2 + 6t - 9$, when will the tide first be at 6 ft?

16. The height h, in feet, of a model rocket t seconds after launch is given by $h = 256t - 16t^2$. As the rocket descends, it deploys a recovery parachute when it reaches 200 ft above the ground. At what time does the parachute deploy?

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Name_____ Class_____ Date_____

4-7 Practice (continued) *Form G*

The Quadratic Formula

Evaluate the discriminant for each equation. Determine the number of real solutions.

17. $x^2 + 5x + 8 = 0$

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

19. $-9x^2 + 12x - 4 = 0$

20. $-3x^2 + 5x - 4 = 0$

21. $4x^2 + 4x = -1$

22. $6x^2 = x + 2$

23. $5x + 1 = 3x^2$

24. $4x^2 - x + 3 = 0$

25. $4x^2 + 36x + 81 = 0$

26. $5x^2 = 3x - 2$

27. $16x^2 - 56x + 49 = 0$

28. $4x^2 - 16x + 11 = 0$

29. In Exercise 16, the height of the rocket was given by $h = 256t - 16t^2$. Use the discriminant to answer the following questions.

a. Will the rocket reach an altitude of 1000 ft?

b. Will the rocket reach an altitude of 1024 ft?

c. Will the rocket reach an altitude of 1048 ft?

30. The number n of people using the elevator in an office building every hour is given by $n = t^2 - 10t + 40$. In this equation, t is the number of hours after the building opens in the morning, $0 \leq t \leq 12$. Will the number of people using the elevator ever be less than 15 in any one hour? Use the discriminant to answer.

Solve each equation using any method. When necessary, round real solutions to the nearest hundredth.

31. $4x^2 + x - 3 = 0$

32. $5x^2 - 6x - 2 = 0$

33. $x^2 - 5x - 9 = 0$

34. $15x^2 - 2x - 1 = 0$

35. $2x^2 = 5x - 3$

36. $4x^2 + 3x = 5$

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