Name_____ Class _____ Date_____

5-3 Practice

Form G

Solving Polynomial Equations

Find the real or imaginary solutions of each equation by factoring.

1. $8x^3 - 27 = 0$

2. $x^3 + 64 = 0$

3. $2x^3 + 54 = 0$

4. $2x^3 - 250 = 0$

5. $4x^3 - 32 = 0$

6. $27x^3 + 1 = 0$

7. $64x^3 - 1 = 0$

8. $x^3 - 27 = 0$

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

10. $x^4 - 12x^2 + 11 = 0$

11. $x^4 - 10x^2 + 16 = 0$

12. $x^4 - 8x^2 + 16 = 0$

13. $x^4 - 9x^2 + 14 = 0$

14. $x^4 + 13x^2 + 36 = 0$

15. $x^4 - 10x^2 + 9 = 0$

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

Find the real solutions of each equation by graphing.

17. $2x^4 = 9x^2 - 4$

18. $x^2 - 16x = 21$

19. $6x^3 + 10x^2 + 5x = 0$

20. $36x^3 + 6x^2 = 9x$

21. $15x^4 = 11x^3 + 14x^2$

22. $x^4 = 81x^2$

For Exercises 23 and 24, write an equation to model each situation. Then solve each equation by graphing.

23. The volume V of a container is 84 ft^3. The width, the length, and the height are x, $x + 1$, and $x - 4$ respectively. What are the container's dimensions?

24. The product of three consecutives integers $n - 1$, n, and $n + 1$ is -336. What are the integers?

Name_____ Class_____ Date_____

5-3 Practice (continued) *Form G*

Solving Polynomial Equations

Solve each equation.

25. $x^4 - x = 0$

26. $3x^4 + 18 = 21x^2$

27. $2x^4 - 26x^2 - 28 = 0$

28. $5x^4 + 50x^2 + 80 = 0$

29. $x^4 - 81 = 0$

30. $x^4 = 25$

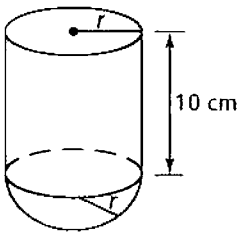
31. $x^5 = x^3 + 12x$

32. $x^4 + 12x^2 = 8x^3$

33. Over 3 years, you save your earnings from a summer job. The polynomial $1600x^3 + 1200x^2 + 800x$ represents your savings, with interest, at the end of the 3 years. The annual interest rate equals $x - 1$. Find the interest rate needed so that you will have \$4000 at the end of 3 years.

34. Error Analysis Your friend claims that the zeros of $3x^3 + 7x^2 - 22x - 8 = 0$ are -4, 2, and -1. What did your friend do wrong? What are the correct factors?

35. The container at the right consists of a cylinder on top of a hemisphere. The container holds 500 cm^3. What is the radius of the container, to the nearest hundredth of a centimeter?



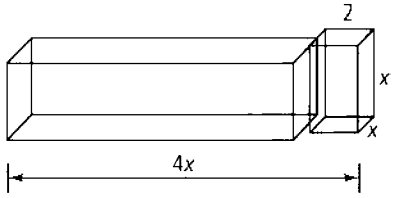
36. Suppose a 2-in. slice is cut from one face of the cheese block as shown. The remaining block has a volume of 224 $in.^3$.

a. What are the dimensions of the new block?

b. What are the dimensions of the old block?

c. What is the original volume?

d. What is the volume of the cut slice?



37. Reasoning A test question asks you to find three integers whose product is 412. Do you have enough information to solve this problem? Explain.

38. Your mother is 25 years older than you. Your father is 3 years older than your mother. The product of all three ages is 32,130. How old is your father?