Name _____ Class _____ Date _____

Practice 6-4

Solving Polynomial Equations

Factor the expression on the left side of each equation. Then solve the equation.

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

17. Over 3 yr, Lucia saved \$550, \$600, and \$650 from baby-sitting jobs. The polynomial $550x^3 + 600x^2 + 650x$ represents her savings, with interest, after 3 yr. The annual interest rate equals $x - 1$. Find the interest needed so that she will have \$2000 after 3 yr.

Solve each equation by graphing. Where necessary, round to the nearest hundredth.

18. $2x^4 = 9x^2 - 4$

19. $x^2 - 16x = -1$

20. $6x^3 + 10x^2 + 5x = 0$

21. $36x^3 + 6x^2 = 9x$

22. $15x^4 = 11x^3 + 14x^2$

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

24. The product of three consecutives integers $n - 1$, n, and $n + 1$ is -336. Write and solve an equation to find the numbers.

Factor each expression.

25. $x^3 - 125$

26. $x^4 - 8x^2 + 15$

27. $x^4 + x^2 - 2$

28. $x^3 + 1$

29. $x^4 - 2x^2 - 24$

30. $x^4 + 10x^2 + 9$

31. $x^3 + 27$

32. $x^4 + 7x^2 - 18$

Solve each equation.

33. $x^4 - x = 0$

34. $3x^4 + 18 = 21x^2$

35. $2x^4 - 26x^2 - 28 = 0$

36. $5x^4 + 50x^2 + 80 = 0$

37. $x^4 - 81 = 0$

38. $x^4 = 25$

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

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