6-4

Practice

Form G

Rational Exponents

Simplify each expression.

1. $125^{\frac{1}{3}}$

3. $32^{\frac{1}{5}}$

5. $(-5)^{\frac{1}{3}} \cdot (-5)^{\frac{1}{3}} \cdot (-5)^{\frac{1}{3}}$

7. $11^{\frac{1}{3}} \cdot 11^{\frac{1}{3}} \cdot 11^{\frac{1}{3}}$

9. $8^{\frac{1}{4}} \cdot 32^{\frac{1}{4}}$

11. $12^{\frac{1}{3}} \cdot 45^{\frac{1}{3}} \cdot 50^{\frac{1}{3}}$

Write each expression in radical form.

13. $x^{\frac{4}{3}}$

15. $a^{1.5}$

17. $z^{\frac{2}{3}}$

19. $m^{2.4}$

21. $a^{-1.6}$

Write each expression in exponential form.

23. $\sqrt[3]{m}$

25. $\sqrt[3]{2y^2}$

27. $\sqrt{-6}$

29. $\sqrt[5]{n^4}$

31. The rate of inflation i that raises the cost of an item from the present value P to

the future value F over t years is found using the formula $i = \left(\dfrac{F}{P}\right)^{\frac{1}{t}} - 1$.

Round your answers to the nearest tenth of a percent.

a. What is the rate of inflation for which a television set costing \$1000 today will become one costing \$1500 in 3 years?

b. What is the rate of inflation that will result in the price P doubling (that is, $F = 2P$) in 10 years?

Write each expression in simplest form. Assume that all variables are positive.

33. $(32^{\frac{1}{5}})^5$

35. 7^0

37. $(-27)^{\frac{2}{3}}$

39. $2y^{\frac{1}{2}} \cdot y$

41. 3.6^0

43. $\left(\dfrac{27}{8}\right)^{\frac{2}{3}}$

45. $(3x^{\frac{1}{2}})(4x^{\frac{2}{3}})$

46. $\dfrac{12y^{\frac{1}{3}}}{4y^{\frac{1}{2}}}$

47. $(3a^{\frac{1}{2}}b^{\frac{1}{3}})^2$

49. $(a^{\frac{2}{3}}b - \frac{1}{2})^{-6}$

51. $\left(\dfrac{x^{\frac{4}{7}}}{x^{\frac{2}{3}}}\right)$

53. $81^{-\frac{1}{2}}$

55. $(9x^4y^{-2})^{\frac{1}{2}}$ 12

57. $\dfrac{x^{\frac{1}{2}}y^{\frac{2}{3}}}{x^{\frac{1}{3}}y^{\frac{1}{2}}}$

59. $x^{\frac{1}{4}} \cdot x^{\frac{1}{6}} \cdot x^{\frac{1}{3}}$

61. $\left(\dfrac{12x^8}{75y^{10}}\right)^{\frac{1}{2}}$