

WRITTEN EXERCISES

Write each expression using radical signs and no negative exponents.

- A** 1. a. $x^{2/3}$ b. $x^{3/2}$ c. $5^{1/2} \cdot x^{-1/2}$ d. $6^{1/3} \cdot x^{2/3}$
 2. a. $3y^{2/5}$ b. $(3y)^{2/5}$ c. $a^{4/7} \cdot b^{-4/7}$ d. $a^{1/10} \cdot b^{-1/5}$

Write each expression using positive rational exponents.

3. a. $\sqrt{x^5}$ b. $\sqrt[3]{y^2}$ c. $(\sqrt[6]{2a})^5$ d. $\sqrt{x} \cdot \sqrt[3]{x} \cdot \sqrt[6]{x}$
 4. a. $\sqrt[3]{8x^7}$ b. $(\sqrt[4]{16x})^3$ c. $\sqrt[3]{27x^{-6}y^2}$ d. $\sqrt[4]{x} \cdot \sqrt[3]{x} \div \sqrt[6]{x}$

Simplify.

5. a. $(\frac{9}{25})^{1/2}$ b. $(\frac{9}{25})^{-1/2}$ c. $(\frac{9}{25})^{5/2}$ d. $(\frac{9}{25})^{-1.5}$
 6. a. $(\frac{27}{8})^{1/3}$ b. $(\frac{27}{8})^{2/3}$ c. $(\frac{27}{8})^{-2/3}$ d. $(\frac{27}{8})^0$
 7. $(16^{-3/5})^{5/4}$ 8. $(25^{-1/3})^{-3/2}$ 9. $(81^{1/2} - 9^{1/2})^2$ 10. $(3^{-2} + 4^{-2})^{-1/2}$
 11. $(8a^{-6})^{-2/3}$ 12. $(9n^{-5})^{-3/2}$ 13. $(4x^{-3})^{-1/2} \cdot 4x^{1/2}$ 14. $(4a^3)^{1/3} \div (4a^3)^{-2/3}$

15. **Consumer Economics** The cost of a certain brand of camera has been increasing at 8% per year. If a camera now costs \$150, find the cost:

- a. 2 years and 6 months from now b. 4 years and 3 months ago

16. **Business** The value of a computer depreciates at the rate of 25% per year. If a computer is now worth \$2400, find its approximate value:

- a. 3 years and 6 months from now b. 20 months ago

Simplify.

17. $a^{1/2}(a^{3/2} - 2a^{1/2})$ 18. $2n^{1/3}(n^{2/3} + n^{-1/3})$ 19. $x^{-1/2}(x^{5/2} - 2x^{3/2})$
 20. $2n^{-2/3}(n^{8/3} - 3n^{5/3})$ 21. $\frac{x^{1/2} - 2x^{-1/2}}{x^{-1/2}}$ 22. $\frac{y^{-1/3} - 3y^{2/3}}{y^{-4/3}}$
 23. $\frac{2n^{1/3} - 4n^{-2/3}}{2n^{-2/3}}$ 24. $\frac{x^{-1/2}(2x^{1/2} - x^{-1/2})}{x^{-1}}$ 25. $\frac{2n^{1/3}(3n^{1/3} - 4n^{4/3})}{2n^{-1/3}}$
 26. $\frac{4ab^{-1/2} - 2ab^{1/2}}{(a^2b)^{-1/2}}$ 27. $\frac{(\sqrt[3]{4a})^2}{\sqrt[6]{4a}}$ 28. $\frac{(\sqrt{2x})^5}{(\sqrt{2x})^9}$

Solve.

29. $8^x = 2^6$ 30. $9^{4x} = 81$ 31. $8^{x-1} = 2^{x+1}$
 32. $9^x = 3^{10}$ 33. $8^x = 2^7 \cdot 4^9$ 34. $27^{1-x} = (\frac{1}{9})^{2-x}$
 35. a. $(8x)^{-3} = 64$ b. $8x^{-3} = 64$ c. $(8+x)^{-3} = 64$
 36. a. $(2x)^{-2} = 16$ b. $2x^{-2} = 16$ c. $4(x-2)^{-2} = 16$