

## LESSON

## 11-1

**Radical Expressions and Rational Exponents***Practice and Problem Solving: A/B*

Write each expression in radical form. Simplify numerical expressions when possible.

1.  $64^{\frac{5}{6}}$

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2.  $(6x)^{\frac{3}{2}}$

\_\_\_\_\_

3.  $(-8)^{\frac{4}{3}}$

\_\_\_\_\_

4.  $(5r^3)^{\frac{1}{4}}$

\_\_\_\_\_

5.  $27^{\frac{2}{3}}$

\_\_\_\_\_

6.  $(100a)^{\frac{1}{2}}$

\_\_\_\_\_

7.  $10^{\frac{8}{5}}$

\_\_\_\_\_

8.  $(x^2)^{\frac{2}{5}}$

\_\_\_\_\_

9.  $(7x)^{-\frac{1}{3}}$

\_\_\_\_\_

Write each expression by using rational exponents. Simplify numerical expressions when possible.

10.  $(\sqrt[4]{2})^7$

\_\_\_\_\_

11.  $(\sqrt{5x})^3$

\_\_\_\_\_

12.  $\sqrt[5]{54^4}$

\_\_\_\_\_

13.  $(\sqrt{169})^3$

\_\_\_\_\_

14.  $(\sqrt[4]{2v})^3$

\_\_\_\_\_

15.  $(\sqrt[5]{n^2})^2$

\_\_\_\_\_

16.  $\frac{1}{(\sqrt{3m})^3}$

\_\_\_\_\_

17.  $\sqrt[7]{36^{14}}$

\_\_\_\_\_

18.  $\frac{1}{(\sqrt[4]{5p})^7}$

\_\_\_\_\_

**Solve.**

19. In every atom, electrons orbit the nucleus with a certain characteristic

velocity known as the Fermi-Thomas velocity, equal to  $\frac{Z^{\frac{2}{3}}}{137}c$ , where  $Z$

is the number of protons in the nucleus and  $c$  is the speed of light. In terms of  $c$ , what is the characteristic Fermi-Thomas velocity of the electrons in Uranium, for which  $Z = 92$ ?

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