Name _____ Class _____ Date _____

6-1 Practice

Form K

Roots and Radical Expressions

Find all the real square roots of each number.

1. 625 **2.** –1.44 **3.** $\frac{16}{81}$

Find all the real cube roots of each number.

4. –216 **5.** $\frac{1}{64}$ **6.** 0.027

Find all the real fourth roots of each number.

7. 0.2401 **8.** 1 **9.** –1296

Find each real root. To start, find a number whose square, cube, or fourth is equal to the radicand.

10. $\sqrt{400}$

$= \sqrt{(20)^2}$

11. $-\sqrt[4]{256}$ **12.** $\sqrt[3]{-729}$

Simplify each radical expression. Use absolute value symbols when needed. To start, write the factors of the radicand as perfect squares, cubes, or fourths.

13. $\sqrt{25x^6}$

$= \sqrt{(5)^2(x^3)^2}$

14. $\sqrt[3]{343x^9y^{12}}$ **15.** $\sqrt[4]{16x^{16}y^{20}}$

6-1 Practice (continued)

Form K

Roots and Radical Expressions

16. The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$. Solving for *r*, the radius of a sphere is $r = \sqrt[3]{\frac{3V}{4\pi}}$. If the volume of a sphere is 20 ft^3, what is the radius of the sphere to the nearest hundredth?

Find the two real solutions of each equation.

17. $x^4 = 81$

18. $x^2 = 144$

19. $x^4 = \frac{2401}{625}$

20. Writing Explain how you know whether or not to include the absolute value symbol on your root.

21. Open-Ended Write a radical that has no real values.

22. Reasoning There are no real *n*th roots of a number *b*. What can you conclude about the index *n* and the number *b*?