Name

8-4A Lesson Master

Questions on SPUR Objectives
See Student Edition pages 574–577 for objectives.

SKILLS Objective C

In 1–6, evaluate without using a calculator.

1. $\sqrt[3]{8} =$ _____
2. $\sqrt[4]{81} =$ _____
3. $\sqrt[3]{1} =$ _____
4. $\sqrt[5]{\frac{1}{32}} =$ _____
5. $\sqrt[4]{\frac{81}{16}} =$ _____
6. $\sqrt{\sqrt[3]{64}} =$ _____

In 7–9, approximate to the nearest hundredth.

7. $\sqrt[3]{17} =$ _____
8. $\sqrt[4]{12^1} =$ _____
9. $\sqrt[3]{\sqrt[5]{\sqrt{417.9}}} =$ _____

PROPERTIES Objective G

10. a. On a CAS, find all complex fourth roots of 2401. _____

    b. Which of your answers from Part a is equal to $\sqrt[4]{2401}$? _____

11. If n is a positive integer and $n \geq 2$, for what values of x is $\sqrt[n]{x} = x^{\frac{1}{n}}$? _____

12. If $x > 0$ and $y > 0$, simplify $\sqrt[4]{81x^{12}y^{28}}$. _____

13. What is the geometric mean of positive real numbers a, b, c, d, and e? _____

USES Objective I

14. The table below gives the estimated 2007 populations of the New England states, in millions. Find the geometric mean of their populations.

State	Connecticut	Maine	Massachusetts	New Hampshire	Rhode Island	Vermont
Population (millions)	3.5	1.3	6.4	1.3	1.1	0.6

Source: http://www.census.gov

15. Recall that the power p generated by a windmill is directly proportional to the cube of the wind speed w, so $p = kw^3$. Suppose a particular small windmill generates 1.6 kilowatts of power in an 8 mph wind. How strong must the wind be to generate at least 1.0 kilowatts of power?