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Unit 5 Holt Resource  
p. 15, Algebra 2;  
p. 16, Algebra 2 with Analysis

### Rational Exponents

Rewrite each expression using rational exponent notation.

|                                     |                                 |                                   |
|-------------------------------------|---------------------------------|-----------------------------------|
| 1. $\sqrt[3]{15}$<br>$15^{1/3}$     | 2. $\sqrt[4]{19}$<br>$19^{1/4}$ | 3. $(\sqrt[3]{5})^3$<br>$5^{3/3}$ |
| 4. $(\sqrt[5]{11})^5$<br>$11^{5/5}$ | 5. $\sqrt[3]{5^2}$<br>$5^{2/3}$ | 6. $\sqrt[7]{21^7}$<br>$21^{7/7}$ |

Rewrite the expression using radical notation.

|                                    |                                    |                                   |
|------------------------------------|------------------------------------|-----------------------------------|
| 7. $7^{1/4}$<br>$\sqrt[4]{7}$      | 8. $13^{1/3}$<br>$\sqrt[3]{13}$    | 9. $5^{3/4}$<br>$(\sqrt[4]{5})^3$ |
| 10. $8^{4/5}$<br>$(\sqrt[5]{8})^4$ | 11. $9^{5/3}$<br>$(\sqrt[3]{9})^5$ | 12. $17^{5/2}$<br>$(\sqrt{17})^5$ |

Find the indicated real  $n^{\text{th}}$  roots of  $a$ .

13.  $n=2, a=49$

14.  $n=3, a=-8$

Evaluate the expression using a calculator. Round the result to three decimal places when appropriate.

|                                |                                     |                               |
|--------------------------------|-------------------------------------|-------------------------------|
| 15. $\sqrt[5]{-32768}$<br>$-8$ | 16. $\sqrt[3]{1354}$<br>$2.463$     | 17. $5^{1/7}$<br>$1.258$      |
| 18. $15^{-1/5}$<br>$.582$      | 19. $(\sqrt[3]{152})^2$<br>$28.481$ | 20. $(-170)^{-2/5}$<br>$.128$ |

Solve the equation. Round your answer to three decimal places when appropriate.

|                                 |                                    |  |                 |
|---------------------------------|------------------------------------|--|-----------------|
| 21. $x^6 = 729$<br>$x = \pm 3$  | 22. $5x^3 = -1080$<br>$x = -6$     | 23. $(x-3)^4 = 16$<br>$x = 5, 1$       | $(x-3) = \pm 2$ |
| 24. $-x^5 = 60$<br>$x = -2.268$ | 25. $x^3 - 13 = 25$<br>$x = 3.362$ | 26. $x^8 + 10 = 70$<br>$x = \pm 1.668$ |                 |