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NAME _____ DATE _____ PERIOD _____

Practice

Rational Exponents

Evaluate each expression.

1. $\frac{8^{\frac{2}{3}}}{8^{\frac{1}{3}}}$

2

2. $\left(\frac{4}{5}\right)^{-2}$

 $\frac{25}{16}$

3. $343^{\frac{2}{3}}$

49

4. $\sqrt[3]{8^3}$

8

5. $\sqrt{5} \cdot \sqrt{10}$

 $5\sqrt{2}$

6. $9^{-\frac{1}{2}}$

 $\frac{1}{3}$

Simplify each expression.

7. $(5n^3)^2 \cdot n^{-6}$

25

8. $\left(\frac{x^2}{4y^{-2}}\right)^{-\frac{1}{2}}$

 $2|x|^{-1}|y|^{-1}$ or $\frac{2}{|x||y|}$

9. $(64x^6)^{\frac{1}{3}}$

 $4x^2$

10. $(5x^6y^4)^{\frac{1}{2}}$

 $|x|^3|y|^2\sqrt{5}$

11. $\sqrt{x^2y^3} \cdot \sqrt{x^3y^4}$

 $|x|^{\frac{5}{2}}|y|^{\frac{7}{2}}$ or $x^2|y|^3\sqrt{xy}$

12. $\left(\frac{p^{6a}}{p^{-3a}}\right)^{\frac{1}{3}}$

 p^{3a}

Express each using rational exponents.

13. $\sqrt{x^5y^6}$

 $|x|^{\frac{5}{2}}|y|^3$

14. $\sqrt[5]{27x^{10}y^5}$

 $27^{\frac{1}{5}}x^2y$

15. $\sqrt{144x^6y^{10}}$

 $12|x^3|y^5$

16. $21\sqrt[3]{c^7}$

 $21c^{\frac{7}{3}}$

17. $\sqrt{1024a^3}$

 $32a^{\frac{3}{2}}$

18. $\sqrt[4]{36a^8b^5}$

 $6^{\frac{1}{2}}a^2b^{\frac{5}{4}}$

Express each using radicals.

19. $64^{\frac{1}{3}}$

 $\sqrt[3]{64}$ or 4

20. $2^{\frac{1}{2}}a^{\frac{3}{2}}b^{\frac{5}{2}}$

 $\sqrt{2a^3b^5}$ or $ab^2\sqrt{2ab}$

21. $s^{\frac{2}{3}}t^{\frac{1}{3}}v^{\frac{2}{3}}$

 $\sqrt[3]{s^2tv^2}$

22. $y^{\frac{3}{2}}$

 $\sqrt{y^3}$ or $y\sqrt{y}$

23. $x^{\frac{2}{5}}y^{\frac{3}{5}}$

 $\sqrt[5]{x^2y^3}$

24. $(x^6y^3)^{\frac{1}{2}}z^{\frac{3}{2}}$

 $\sqrt{x^6y^3z^3}$ or $|x|^3yz\sqrt{yz}$

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Look fo

Many problems involve classification, but which classification? Determine the problem. Divide the problem.

Example

Complete.

- Find the value of b if $0 < b < 1$.
- Solve $\frac{x}{x+1} = \frac{1}{2}$.
- Find the value of x if $x^2 = 16$.