



5-2 Additional Practice

Properties of Exponents and Radicals

Rewrite each expression using the properties of exponents.

1. $\left(\frac{4}{64^{\frac{5}{6}}}\right)^{\frac{1}{2}}$

2. $3m^{\frac{1}{4}}(mn^{\frac{1}{3}})^{\frac{3}{2}}$

3. $2a^{\frac{1}{2}}(5a^{\frac{1}{2}}b^{\frac{1}{4}})^2$

4. $(x^{\frac{1}{3}} \cdot x^{\frac{1}{9}})^6 \div x^{\frac{1}{3}}$

How can you rewrite each expression?

5. $\sqrt[3]{125x^9y^7}$

6. $\sqrt[4]{\frac{a^5b^3}{625a}}$

7. $\sqrt[5]{288x^3y^7}$

8. $\sqrt[3]{\frac{297m^4n^5}{3m^2n}}$

What is the reduced radical form of each expression?

9. $(\sqrt[4]{32})^2$

10. $(\sqrt[3]{4^5})(\sqrt[3]{5^5})$

11. $\sqrt{a^3b^5} \cdot 5\sqrt{4ab}$

12. $\sqrt[3]{\frac{24x^3}{36x}}$

How can you rewrite each expression in a simpler form?

13. $\sqrt[3]{3000} + \sqrt[3]{3} - \sqrt[3]{1029}$

14. $\sqrt{45} - \sqrt{180} - \sqrt{720}$

Multiply.

15. $(x - \sqrt{8})(x + \sqrt{8})$

16. $\sqrt{12}(\sqrt{3} + \sqrt{6})$

What is the reduced radical form of each expression?

17. $\frac{3 - \sqrt{7}}{3 - \sqrt{5}}$

18. $\frac{-5x}{3 - \sqrt{x}}$

19. Discuss the possible values of k such that $\sqrt{50} + \sqrt{k}$ can be written as a single term.

20. Write $\sqrt{\frac{16}{7}}$ in two different ways, one where the number is simplified and another where the denominator is rationalized.

21. The length of a rectangle is $(3 + \sqrt{7})m$ and its width is $(1 + 2\sqrt{7})n$. What is the area of the rectangle?