

2.3 Practice Set

1. Why do the indexes have to be the same in order to multiply radicals? (Hint: Rewrite them as rational exponents.)
2. What can you do first to make the following problem easier?

$$\frac{\sqrt{75x^5y}}{\sqrt{3xy^3}}$$

Perform the indicated operation(s) and simplify if possible.
Assume that all variables represent positive real numbers.

3. $\sqrt{5} \cdot \sqrt{2}$

4. $\sqrt[4]{9} \cdot \sqrt[4]{9}$

5. $\sqrt[3]{9} \cdot \sqrt[3]{21}$

6. $\sqrt{3} \cdot \sqrt{6x}$

7. $\sqrt{\frac{5}{x}} \cdot \sqrt{\frac{3}{y}}$

8. $\sqrt[4]{8y^3} \cdot \sqrt[4]{2y}$

9. $\sqrt{\frac{9}{16x^8}}$

10. $\sqrt{\frac{4y^3}{25}}$

11. $\sqrt[4]{\frac{b^5}{256}}$

$$12. \quad \sqrt[3]{\frac{16z^{17}}{27}}$$

$$13. \quad \sqrt[5]{\frac{32}{y^{10}}}$$

$$14. \quad \sqrt[3]{\frac{54xy^5}{8z^9}}$$

$$15. \quad \sqrt{\frac{x^{10}y^5}{9}}$$

$$16. \quad \sqrt{\frac{7n^2}{144m^4}}$$

$$17. \quad -\sqrt[3]{\frac{z^{13}}{64x^{21}}}$$

$$18. \quad \frac{\sqrt{18}}{\sqrt{2}}$$

$$19. \quad \frac{7\sqrt[4]{48}}{\sqrt[4]{3}}$$

$$20. \quad \frac{\sqrt[3]{x^2y^8}}{\sqrt[3]{x^5y^4}}$$

$$21. \quad \frac{\sqrt[5]{64r^9}}{\sqrt[5]{2r^{-1}}}$$

$$22. \quad \sqrt[3]{12z^{28}} \cdot \sqrt[3]{2z^{-3}}$$

$$23. \quad \sqrt[4]{3xy^2} \cdot \sqrt[4]{27x^3y^5}$$

$$24. \quad \sqrt{7m^8n} \cdot \sqrt{21mn^5}$$

$$25. \quad \sqrt[3]{5x^4yz^9} \cdot \sqrt[3]{25x^2y^5z}$$

Distributed Practice Problems

Simplify each of the following. Assume that all variables represent positive real numbers.

26. $(-27x^6)^{\frac{2}{3}}$

27. $(81x^8y^4)^{-\frac{1}{4}}(25x^3y^{-2})^{\frac{1}{2}}$

28. $\sqrt{x^2 - 8x + 16}$

What if the variable was not assumed to be positive here?

How would the answer be different?

Solve each of the following equations for the indicated variable.

29. $T = \frac{rs}{r+s}$ for r

30. $M = \frac{na+nb}{5}$ for n