

# Practice

## Rational Exponents

*Evaluate each expression.*

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

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

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

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

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

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

*Simplify each expression.*

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

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

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

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

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

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

*Express each using rational exponents.*

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

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

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

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

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

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

*Express each using radicals.*

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

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

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

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

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

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