**Express the number in the form a/b, where a and b are integers.**

1. $\frac{2^{-3}}{3^{-2}}$ 2. ($-\frac{3}{2})^{4}$ – 2-4 3. (-0.008)2/3 4. $\frac{2^{0}+ 0^{2}}{2+0}$

**Simplify.**

 5. (4a3/2)(2a1/2) 6. (8r)1/3(2r1/2) 7. (8x-2/3)x1/6 8. ($\frac{-y^{\frac{3}{2}}}{y^{\frac{-1}{3}}})^{3}$

 9. $\frac{(x^{6}y^{3})^{\frac{-1}{3}}}{(x^{4}y^{2})^{\frac{-1}{2}}}$ 10. $a^{\frac{4}{3}}a^{\frac{-3}{2}}a^{\frac{1}{6}}$ 11. ( $\frac{c^{-4}}{16d^{8}})^{\frac{3}{4}}$ 12. (3x5/6)(8x2/3)

**Rewrite the expression using rational exponents.**

13. $\sqrt[3]{x^{5}}$ 14. $\sqrt{x^{2}+y^{2}}$ 15. $\sqrt{a+\sqrt{b}}$

**Rewrite the expression using a radical.**

16. 4 + x3/2 17. (4 + x)3/2 18. (4x)3/2

**Simplify the expression, and rationalize the denominator when appropriate.**

19. $\sqrt[5]{-64}$ 20. $\frac{1}{\sqrt[3]{2}}$ 21. $\sqrt{\frac{1}{7}}$ 22. $\sqrt{9x^{-4}y^{6}}$

23. $\sqrt[4]{81r^{5}s^{8}}$ 24. $\sqrt[3]{\frac{2x^{4}y^{4}}{9x}}$ 25. $\sqrt[4]{\frac{x^{7}y^{12}}{125x}}$ 26. $\sqrt[4]{(3x^{5}y^{-2})^{4}}$

Simplify the expression, assuming x and y may be negative.

27. $\sqrt{x^{4}y^{10}}$ 28. $\sqrt[4]{x^{8}(y-1)^{12}}$

29. The length-weight relationship for Pacific halibut can be approximated by the formula L = 0.46$\sqrt[3]{W}$, where W is in kilograms and L is in meters. The largest documented halibut weighed 230 kilograms. Estimate its length.

30. The length-weight relationship for a whale can be approximated by W = 0.0016L2.43, where W is in tons and L is in feet. Estimate the weight of a whale that is 25 feet long.