

## Chapter 5 Prerequisite Skills

1. Which of the following numbers are perfect squares, perfect cubes, or both?

a) 144                      b) 2197  
c) 16                        d) 64

2. Evaluate.

a)  $\sqrt{49}$                       b)  $-\sqrt[3]{8}$   
c)  $-\sqrt{81}$                     d)  $\sqrt{196}$

3. Determine an integer that is equal to each expression.

a)  $-\sqrt[3]{27}$                       b)  $\sqrt{144}$   
c)  $\sqrt{961}$                       d)  $\sqrt[3]{17\,576}$

4. Simplify each expression. State the answer using positive exponents.

a)  $(x^3)(x^{-5})$                 b)  $\frac{y^{-4}}{y^{-2}}$   
c)  $\frac{t^3}{t^7}$                               d)  $\left(\frac{g^{-1}}{g^0}\right)^3$

5. Simplify each expression. Express the answer to four decimal places, when possible.

a)  $(0.5^2)^{-3}$                 b)  $\left[\left(\frac{2}{3}\right)^3\right]^{-3}$   
c)  $[(5)(5^3)]^{-1}$             d)  $\left(\frac{6^4}{6^4}\right)^{-3}$   
e)  $\left(\frac{8}{8^3}\right)^{-4}$                     f)  $\left[\left(\frac{3}{4}\right)^{-4} \div \left(\frac{3}{4}\right)^2\right]^{-1}$

6. Simplify each expression by restating it using positive exponents only.

a)  $(x^3)\left(x^{\frac{2}{5}}\right)$                       b)  $\frac{(m^{-2})^{\frac{2}{3}}}{\left(m^{\frac{1}{2}}\right)^5}$   
c)  $(d^4)^{-\frac{3}{8}}$                       d)  $\left[\frac{(x^{-2})}{(xy)^3}\right]^{1.5}$

7. Write each expression as a power with a single rational exponent. Then, evaluate. Express the answer to four decimal places, when possible.

a)  $(3^2)\left(3^{\frac{5}{6}}\right)$                       b)  $\frac{(5^2)}{\left(125^{\frac{1}{3}}\right)}$   
c)  $\left[(8)\left(4^{\frac{3}{4}}\right)\right]^{\frac{2}{3}}$                       d)  $\left(\frac{2^3}{8^2}\right)^{\frac{4}{5}}$

8. Express each radical as a power.

a)  $\sqrt{(12p)^3}$                       b)  $3^4\sqrt{x^3}$   
c)  $\sqrt[3]{\frac{s^3}{t^5}}$                               d)  $5\sqrt[5]{\frac{5}{y^3}}$

9. Evaluate each expression. State the result to four decimal places.

a)  $4\sqrt{17}$                               b)  $(65)^{\frac{2}{3}}$   
c)  $0.3(22)^{\frac{1}{2}}$                               d)  $\frac{\sqrt{36}}{\sqrt{7}}$

