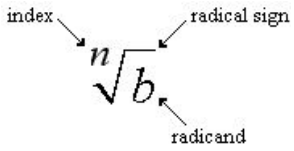

Radical Notation

Let a be a real number, n be a positive integer, and $a^{1/n}$ be a real number

$$\sqrt[n]{a} = a^{1/n}$$

Let a be a real number, m be an integer, n be a positive integer, and $\sqrt[n]{a}$ be a real number.

$$a^{m/n} = (\sqrt[n]{a})^m = \sqrt[n]{a^m}$$

1. Write each root using exponents and evaluate
   a. $\sqrt[3]{216}$ b. $\sqrt[4]{-256}$ c. $-\sqrt[3]{-343}$

2. If the expression is in exponential form, write it in radical form. If it is in radical form, write it in exponential form. Assume all variables represent positive real numbers.
   a. $p^{5/4}$ b. $(5r+3t)^{4/7}$ c. $\sqrt[4]{z^5}$

3. Simplify the following:
   a. $\sqrt[6]{x^6}$ b. $\sqrt[4]{81p^{12}q^4}$

4. Simplify each expression. Assume all variables represent positive real numbers.
   a. $\sqrt[3]{250}$ c. $-\sqrt{\frac{16}{49}}$
   b. $\sqrt{7} \cdot \sqrt{5xt}$ d. $\sqrt[4]{\frac{m}{n^4}}$

e. $\sqrt{24m^6n^5}$

g. $\sqrt{\frac{g^3h^5}{r^3}}$

f. $\sqrt[3]{25(-3)^4(5)^3}$

h. $\sqrt[5]{\sqrt[3]{9}}$

5. Perform the indicated operations. Assume all variables represent positive real numbers.

a. $4\sqrt{18k} - \sqrt{72k} + \sqrt{50k}$

d. $(\sqrt{5} + \sqrt{10})^2$

b. $\sqrt[4]{256x^5y^6} + \sqrt[4]{625x^9y^2}$

e. $\frac{\sqrt[3]{8m^2n^3} \cdot \sqrt[3]{2m^2}}{\sqrt[3]{32m^4n^3}}$

c. $(\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$

6. Rationalize each denominator. Assume all variables represent nonnegative numbers and that no denominators are 0.

a. $\frac{\sqrt{7}}{\sqrt{3}-\sqrt{7}}$

b. $\frac{9-r}{3-\sqrt{r}}$

c. $\frac{1}{1-\sqrt{2}}$

Homework:

Pg. 75
11, 17, 47, 57, 59, 63, 65, 77, 85, 93, 101, 102, 106

Most Difficult First:

Pg. 75
22, 70, 98, 108