

1) Write the following expressions so that they only contain positive exponents.

a. $\left(\frac{3x^2}{x^4y^{-2}}\right)^3 = \frac{27x^6}{x^{12}y^{-6}}$
 Subtract exponents
 $= \frac{27x^6y^6}{x^{12}}$
 $= \frac{27x^{-6}y^6}{1}$
 $= \frac{27y^6}{x^6}$

c. $(3x^2)^{-3} = \frac{1}{27}x^{-6} = \frac{1}{27x^6}$

b. $\frac{6x^{-10}}{x^{-4}} = \frac{6x^{-6}}{1} = \frac{6}{x^6}$
 Subtract exponents

d. $\left(\frac{5x^{-3}}{3x^2}\right)^{-2} = \frac{5^{-2}x^6}{3^{-2}x^{-4}} = \frac{3^2x^6x^4}{5^2} = \frac{9x^{10}}{25}$
 Add exponents

2) Write the following expression so that they are in the form kx^n , where n is an integer and $x \neq 0$. (Make sure there are no x 's in the denominator.)

a. $\frac{4x^4}{(-2x)^{-3}} = \frac{4x^4}{(-2)^{-3}x^{-3}} = (-8)4x^4x^3 = (-8)4x^7 = -32x^7$

b. $\frac{(x^3y^2z^4)^2}{x^8z^{10}} = \frac{x^6y^4z^8}{x^8z^{10}} = \frac{x^{-2}y^4z^{-2}}{1}$
 Subtract exponents

3) Write the following exponential expression in radical form.

a. $x^{\frac{2}{5}} = \sqrt[5]{x^2}$

b. $81^{-\frac{4}{3}} = \frac{1}{\sqrt[3]{81^4}}$

4) Write the following radical expressions in exponent form.

a. $\sqrt[12]{x^3}$

$$x^{3/12} = x^{1/4}$$

b. $\sqrt[3]{27^2} = 3^2 = 9$

$$27^{2/3} = 9$$

5) Write each number in scientific notation.

a. 0.000000786

$$7.86 \times 10^{-7}$$

b. 3940

$$3.94 \times 10^3$$

6) Write each number in standard notation.

a. 6.17×10^3

$$6170$$

b. 5.4×10^{-8}

$$.000000054$$

7) Write each answer in scientific notation.

a. $(5.4 \times 10^{-1})(7 \times 10^3)$

$$37.8 \times 10^2$$

$$3.78 \times 10^3$$

b. $(1.6 \times 10^{-3}) + (7.4 \times 10^{-2})$

$$(1.6 \times 10^{-3}) + (74 \times 10^{-3})$$

$$75.6 \times 10^{-3}$$

$$7.56 \times 10^{-2}$$