5.1 Properties of Exponents

1. $a^0 = 1$
2. $\left(\frac{a}{b}\right)^{-m} = \left(\frac{b}{a}\right)^{m}$ $\left(\frac{2}{5}\right)^{-2} = \left(\frac{5}{2}\right)^{2}$
3. $(ab)^m = a^m b^m$
4. $\left(\frac{a}{b}\right)^{m} = \frac{a^m}{b^m}$
5. $(a^m)^n = a^{m \cdot n}$
6. $a^m \cdot a^n = a^{m+n}$
7. $\frac{a^m}{a^n} = a^{m-n}$
8. $a^{-m} = \frac{1}{a^m}$

Ex: $\left(\frac{8x^{-1}y^{4}}{4x^{3}y^{2}}\right)^{-3}$

$\left(\frac{4x^{3}y^{2}}{8x^{-1}y^{4}}\right)^{3}$ (2)

$\frac{(4x^{3}y^{2})^{3}}{(8x^{-1}y^{4})^{3}}$ (3)

$= \frac{(4)^{3}(x^{3})^{3}(y^{2})^{3}}{(8)^{3}(x^{-1})^{3}(y^{4})^{3}}$ (4)

$= \frac{64x^{9}y^{6}}{512x^{-3}y^{12}}$ (5)

$\frac{1}{8}x^{12}y^{-6}$

$\frac{1x^{12}}{8y^{6}}$

$$(5x^{-2}y^{0})^{-2}(3x^{4}y^{-4})$$

$$(5x^{-2})^{-2}(3xy^{-4}) \quad (1)$$

$$(5)^{-2}(x^{-2})^{-2} \cdot 3xy^{-4}$$

$$\frac{1}{25} \cdot x^{4} \cdot 3 \cdot x \cdot y^{-4}$$

$$\frac{3}{25}x^{5}y^{-4}$$

$$\frac{3x^{5}}{25y^{4}}$$

Scientific Notation

Convert to sci. not.

.00072 $= 7.2 \times 10^{-4}$

452,000,000 $= 4.52 \times 10^{8}$

convert to decimal/customary notation/ Standard form

4.37×10^{-5}

.00004.37

.0000437

Simplify

$$\frac{(2{,}400{,}000{,}000)(.0000045)}{(.00003)(1500)}$$

$$\frac{(2.4 \times 10^{9})(4.5 \times 10^{-6})}{(3 \times 10^{-5})(1.5 \times 10^{3})}$$

$$\frac{10.8 \times 10^{3}}{4.5 \times 10^{-2}}$$

$3 + +2 = 5$

$$2.4 \times 10^{5}$$

P. 311

2-80 even

odds extra

credit