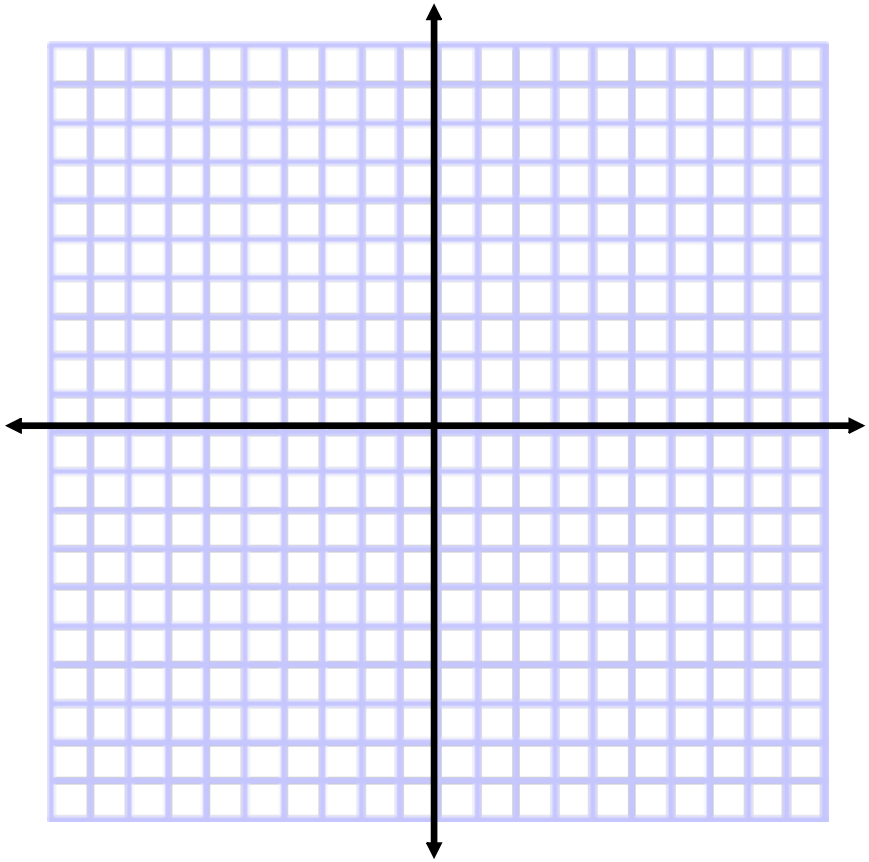
Review - Chapter 7 Test



Homework Review - Sections 8.1 and 8.2

(42) $\left(\frac{2f^2g^3}{3fg}\right)^4$

$\left(\frac{2fg^2}{3}\right)^4 = \frac{2^4f^4(g^2)^4}{3^4}$

$= \frac{16f^4g^8}{81}$

(45) $\left(\frac{3x^3y}{x^2}\right)^3 \cdot \left(\frac{y^2x^4}{5y}\right)^2$

$(3xy)^3 \cdot \left(\frac{yx^4}{5}\right)^2$

$3^3x^3y^3 \cdot \frac{(x^4)^2y^2}{5^2}$

$\frac{9x^3y^3 \cdot x^8y^2}{25} = \frac{9x^{11}y^5}{25}$

Negative and Zero exponents:

$a^0 = 1 \quad (a \neq 0)$

What is a zero exponent?
What does it mean?

$7^0 = 1 \quad (n+2)^0 = 1$

$(4a^3 - 2ab + 6z^2)^0 = 1$

$a^{-n} = \frac{1}{a^n} \quad (a \neq 0)$

What is a negative exponent?
What does it mean?

$4^{-5} = \frac{1}{4^5}$

$(ab)^{-3} = \frac{1}{(ab)^3}$

$(16x^4y^2z + a^2b^4)^{-1} = \frac{1}{16x^4y^2z + a^2b^4}$

Summary of Exponent Properties:

$a^n a^m = a^{n+m}$ ← Names don't really matter ... Product of Powers Property

$(a^n)^m = a^{n \cdot m}$ ← Power of Powers Property

$(ab)^n = a^n b^n$ ← Power of a Product Property

$\frac{a^n}{a^m} = a^{n-m}$ ← Quotient of Powers Property

$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ ← Power of a Quotient Property

$a^0 = 1 \quad (a \neq 0)$ ← Definition of Zero Exponents

$a^{-n} = \frac{1}{a^n}$ ← Definition of Negative Exponents

13. x^{-7}

14. $6y^{-4}$

15. $(2b)^{-5}$

19. $(4x^{-4}y^{2})^{-3}$

20. $(8mn^{3})^{0}$

21. $\dfrac{c^{-3}}{d^{-5}}$

22. $\dfrac{x^{2}}{y^{-4}}$

23. $\dfrac{x^{-6}}{4y^{5}}$

24. $\dfrac{1}{3x^{-3}y^{-7}}$

Metric System The metric system has names for very small lengths.

a. One micrometer is 10^3 times the length of one nanometer. One nanometer is 10^{-9} meter. Write one micrometer in meters.

b. One femtometer is 10^3 times the length of one attometer. One attometer is 10^{-18} meter. Write one femtometer in meters.

c. One centimeter is 10^{10} times the length of one picometer. One picometer is 10^{-12} meter. Write one centimeter in meters.

Homework:

p. 506, 3-10, 28-43, 51, 53