1.12: Exponent Laws

Warm-Up

Evaluate:

1) $\left(\frac{1}{3}\right)^4$

2) $\left(\frac{-2}{3}\right)^5$

3) $\left(\frac{3}{5}\right)^3$

4) $\left(\frac{-1}{2}\right)^6$

Exponent Laws

Exponent Law #2

	$2^5 \times 2^4$	$x^6 x^3$
Expand		
As a Single Power		
Law #2: To multiply powers with the same base, keep the base the same and add the exponents: $a^m \times a^n = a^{m+n}$		

Exponent Law #3

	$\frac{(3^5)}{(3^2)}$	$\frac{(x^7)}{(x^5)}$
Expand		
As a Single Power		

Law #3: To divide powers with the same base, keep the base the same and subtract the exponents: $\frac{a^m}{a^n} = a^{m-n}$

Exponent Law #4

	$(3^4)^2$	$(x^5)^2$
Expand		
As a Single Power		
Law #4: To simplify a power of a power, keep the base the same and multiply the exponents: $(a^m)^n = a^{m \times n}$		

Examples:

Simplify each of the following, leaving your answers as a single power.

1) $(5)^4$

2) $(-2)^5(-2)^2$

3) $\dfrac{4^5}{4^3}$

4) $\left(\dfrac{3^6}{3^4}\right)^5$

5) $\left(3x^2\right)^3$

6) $\dfrac{x^5y^2}{x^3}$

7) $\left(\dfrac{x^6}{y^4}\right)^5$

8) $\dfrac{x^4y^2}{x^3y^2} \bullet \dfrac{18x^3y^5}{9x^2}$

Write each of the following as a power with a base of 2:

1) 16

2) 64

3) 8

4) 32

5) 8^2

6) 16^2

7) $\left(\frac{8}{2^2}\right)^2$

8) $\left(\frac{16^3}{4^2}\right)^2$

Homework: p.229-231 #1-4,5ag,6abc,7ab, 8aimnp,9abeh,10ac,11ce,15,16, 17,18aceh,19