DO NOW

True or False?

1. $7x^0 - (6x)^0 = 1$ FALSE

$7-1=6$

2. $(4c)^2 = 8c^2$ FALSE

$4^2=16$

3. $m^4(m^5) = m^{20}$ FALSE

m^9

1.6 More Exponent Rules

Addition and Subtraction:

Like bases with unlike exponents CANNOT be added or subtracted unless evaluated first.

Examples:

1. 2^2+2^3

$4+8$

12

2. 3^3-3^2

$27-9$

18

3. a^3+a^2

a^3+a^2

Consider: $\left(\frac{x}{y}\right)^3 = \left(\frac{x}{y}\right)\left(\frac{x}{y}\right)\left(\frac{x}{y}\right)$

$\frac{x\cdot x\cdot x}{y\cdot y\cdot y} = \frac{x^3}{y^3}$

$\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}$

Consider: $(xy)^4 = (xy)(xy)(xy)(xy)$

Apply Associative Property

$x(yx)(y)(xy)(xy)$

Apply commutative Property

$x(xy)(y)(xy)(xy)$

Apply Associative Property

$(x\cdot x)(y\cdot y)(xy)(xy)$

$\vdots$

$(xy)^a = x^a y^a$

$(x\cdot x\cdot x\cdot x)(y\cdot y\cdot y\cdot y)$

$x^4 y^4$

Examples:

1. $\left(\frac{4}{7}\right)^2$

$\frac{4^2}{7^2} = \frac{16}{49}$

2. $\left(\frac{a}{b^2}\right)^3$

$\frac{a^3}{(b^2)^3} = \frac{a^3}{b^6}$

3. $(xy)^5$

x^5y^5

4. $(a^2b)^4$

$(a^2)^4(b)^4$

a^8b^4

5. $(g^3h^2)^5$

$(g^3)^5(h^2)^5$

$g^{15}h^{10}$

6. $(3x^5)(4x)^2$

$(3x^5)(16x^2)$

$48x^7$

Mixed Examples:

1. $5^6(5^{-3})$

5^3

125

2. $p^0+p^1+p^5+p^5$

$1+p+2p^5$

3. $\frac{4^3}{4^5}$

$\frac{1}{4^2}$

4. $(10^4)^{-1}$

10^{-4}

$\frac{1}{10^4}$

5. $\left(\frac{3p}{2q}\right)^2$

$\frac{(3p)^2}{(2q)^2}$

$\frac{9p^2}{4q^2}$

6. $(4p)^3$

$(4)^3(p)^3$

$64p^3$

HOMEWORK

Worksheet - HW 1.6 Exponent Rules
Day 3