

6.1B Properties of Exponents (Power of a Power)

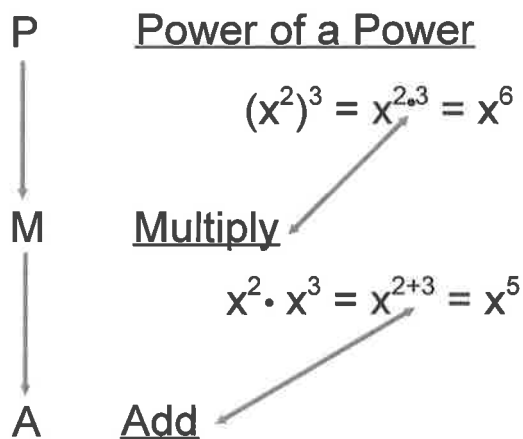
Expand. What do you think the new rule is?

$$(4^2)^3$$

$$4^2 \cdot 4^2 \cdot 4^2$$

$$4^6$$

YOU MAY ONLY USE THESE RULES
WITH COMMON BASES!!



Power of a Product Property

$$3x^2 = 3 \cdot x \cdot x = 3x^2$$

$$(3x)^2 = 3x \cdot 3x = 3 \cdot 3 \cdot x \cdot x = 3^2 x^2 = 9x^2$$

* Distribute the outer exponent to all exponents inside.

* Don't forget about the bases that have an exponent of 1.

Simplify.

1. $(5^2)^4$

$$5^8 = 390625$$

2. $(4^3)^0$

$$4^0 = 1$$

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

$$x^{-15} \cdot x^4 = x^{-11} = \frac{1}{x^{11}}$$

Simplify.

1. $(2y^4)^2$

$$2^2 y^8$$

$$4y^8$$

2. $(-2y^5)^3$

$$-8y^{15}$$

3. $(x^6 y^{-3})^{-2}$

$$x^{-12} y^6 = \frac{y^6}{x^{12}}$$

Simplify each.

1. $(6^{-2})^{-1}$

$$6^2 = 36$$

2. $(w^{12})^5$

$$w^{60}$$

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

$$2^4 x^{-12} y^{16}$$

$$\frac{16y^{16}}{x^{12}}$$

4. $(6a^5b^{-1}c)^2$

$$6^2 a^{10} b^{-2} c^2$$

$$\frac{36a^{10}c^2}{b^2}$$

Simplify: $x^3y^8 \cdot (2x^4y^3)^3 \cdot x^{-15}y$

$$x^3y^8 \cdot 2^3x^{12}y^9 \cdot x^{-15}y$$

$$8y^{18}$$

Homework

WS 6.1B Properties of Exponents