Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Algebra 1 S1

May 11 , 2020

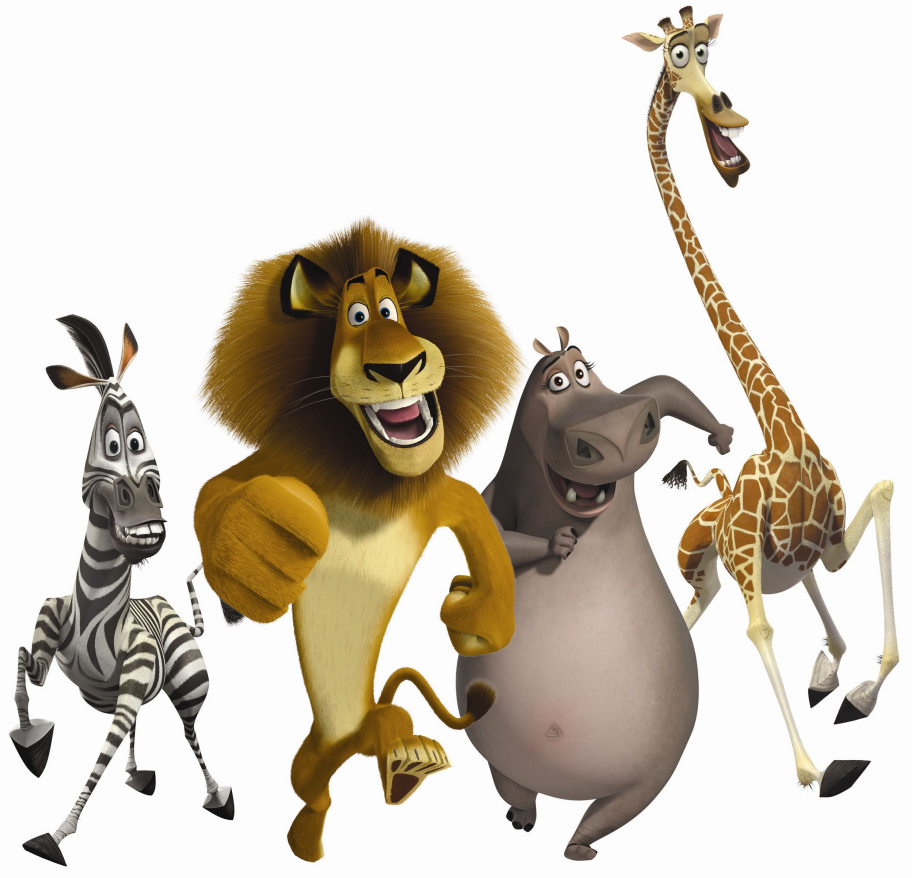
Algebra 1 S1
Lesson: May 11

Objective/Learning Target:

Students will find equivalent expressions using the power of a power rule of exponents.

(May 11 lesson)

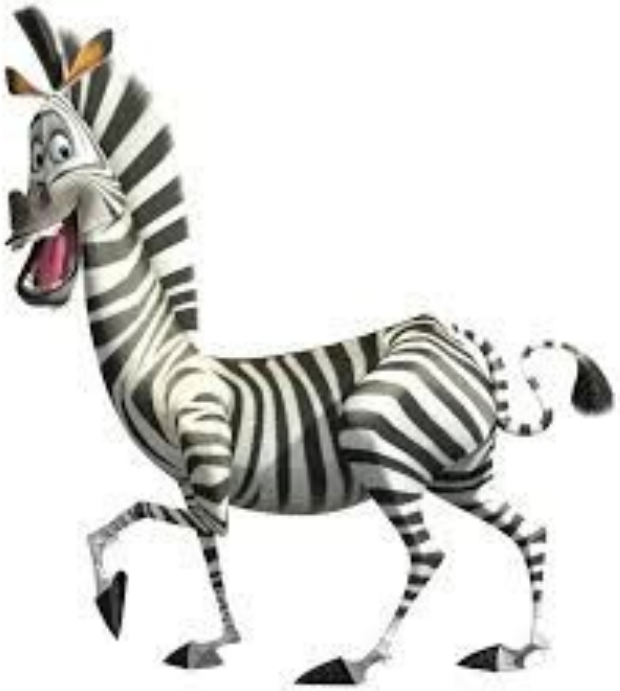
Brainstarter



Let's Get Started

Watch Video 1:

The "power rule" tells us that to raise a power to a power, just multiply the exponents.



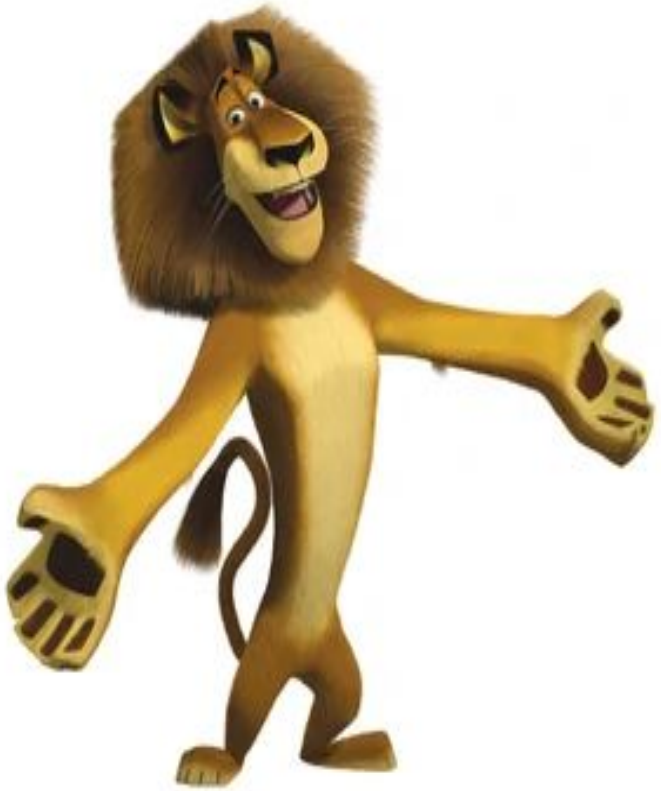
For any number a and all integers m and n:

$$(a^m)^n = a^{mn}$$

$$(3^2)^3 = 3^{2\cdot 3} = 3^6$$

$$(x^2)^4 = x^{2\cdot 4}$$

Your First Example



$(3a^3)^2 = 9a^6$

Remember multiply the exponents

proof

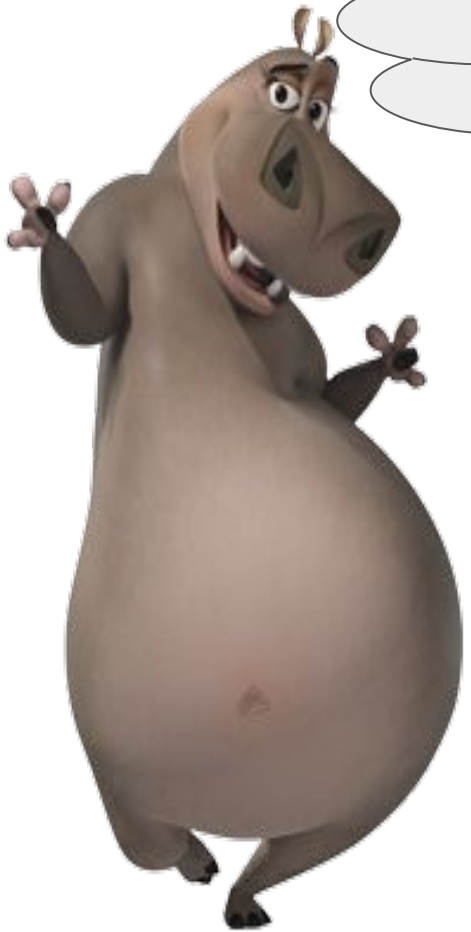
$(3a^3)^2$

$= (3)^2(a^3)^2$

$= (3.3)(a.a.a)(a.a.a)$

$= 9a^6$

Your Second Example



In the proof you use the product rule! Add the exponents

$(3ab^4)^2$

$9a^2b^8$

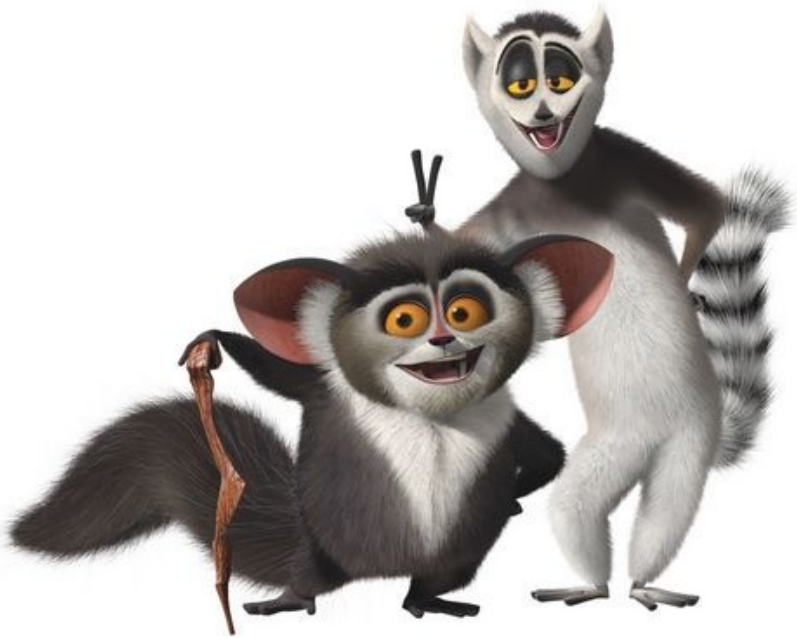
Proof

$(3)^2(a)^2(b^4)^2$

$(3)(3)(a)(a)(b.b.b.b)(b.b.b.b)$

$9a^2b^8$

Let's try a little harder example...



$(-2x)^3$

$-8x^3$

Proof

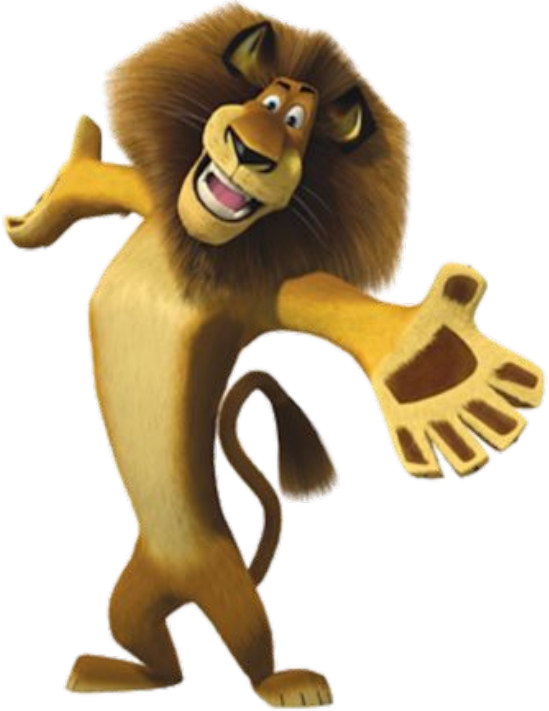
$(-2)(-2)(-2)(x)(x)(x)$

$(4)(-2)$

$-8x^3$

Be careful when multiplying a negative inside the parentheses!

I think you've got it!



$(-2x^2)^4$

$16x^8$

Can you see the pattern? A negative expression raised to an odd exponent is a negative number. A negative expression raised to an even exponent is a positive number.

Proof

$(-2)(-2)(-2)(-2)(x.x.x.x.x.x.x.x.)$

$16x^8$

This example will be the ultimate test of your expertise!

$(4n^2 . n^2)^2$

$16n^8$

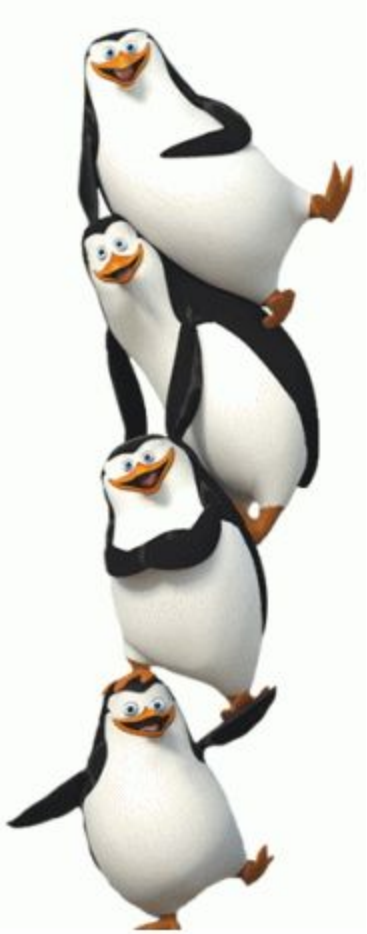
Proof

$(4n.n.n.n)(4n.n.n.n)$

$(4)(4)(n.n.n.n.n.n.n.n)$

$16n^8$

yippee!



Now it's your turn!

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

3). $(4n^2 \cdot n)^2$

2). $(-6xyx^4)^2$

4). $(-3n^3y^2)^3$

Answer Key:

Once you have completed the problems, check your answers here.

1). $16n^8$

2). $36y^2x^8$

3). $16n^6$

4). $-27n^9y^6$

Additional Practice:

Finding equivalent expressions using the power of powers rule of exponents.