

# EXPLORING QUADRATIC & EXPONENTIAL GRAPHS



# LEARNING GOAL

- Compare the graphs of  $y = x^2$  and  $y = 2^x$  to determine the meanings of zero & negative exponents.



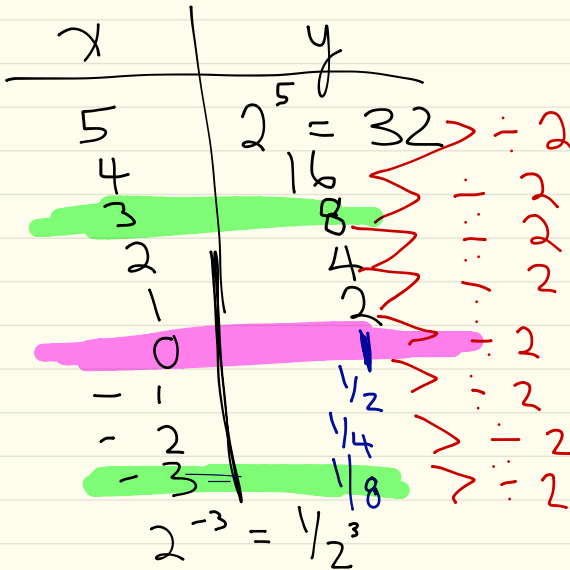
# Review

## Rational Number

Any number  $\frac{b}{a}$ ,  $a \neq 0$

Rational Form - means express as a fraction.

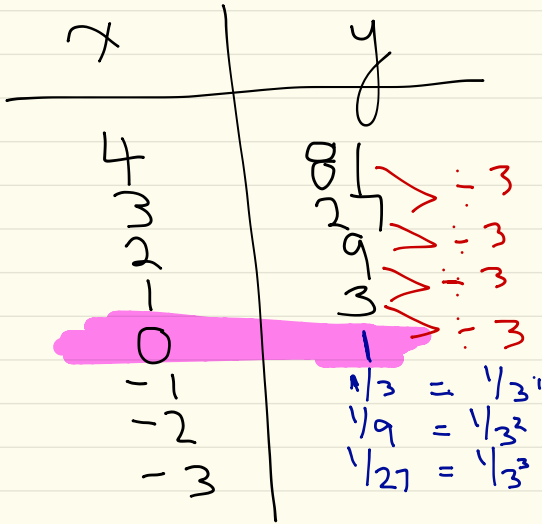
$$y = 2^x$$



$$a^{-n} = \frac{1}{a^n}, a \neq 0$$

$$2^0 = 1$$

$$y = 3^x$$



$$a^0 = 1; a \neq 0$$

Rational:

$$\left(\frac{4}{3}\right)^{-2} = \left(\frac{3}{4}\right)^2$$

$$= \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$$

## More Review

Product Rule:  $2^3 \times 2^2$

$$= 2^{3+2}$$

$$a^n \times a^m = a^{n+m}$$

Quotient Rule:  $\frac{2^5}{2^3}$

$$a^m \div a^n = a^{m-n}$$

$$= 2^{5-3}$$
$$= 2^2$$
$$= 4$$

Power Rule:  $(2^3)^4$

$$(a^m)^n = a^{m \times n}$$

$$= 2^{3 \times 4}$$
$$= 2^{12}$$

# EXAMPLES

- Evaluate.

$$(-5)^{-4}$$

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

$$= \frac{1}{625}$$

$$-5^{-4}$$

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

$$= -\frac{1}{625}$$



# REINFORCEMENT

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Friday Quiz  
(Sections 3.3-3.6)

