

# Warmup $1/(8^5 \cdot 8^{-4}) + \left(\frac{3^{10}}{3^8}\right)$

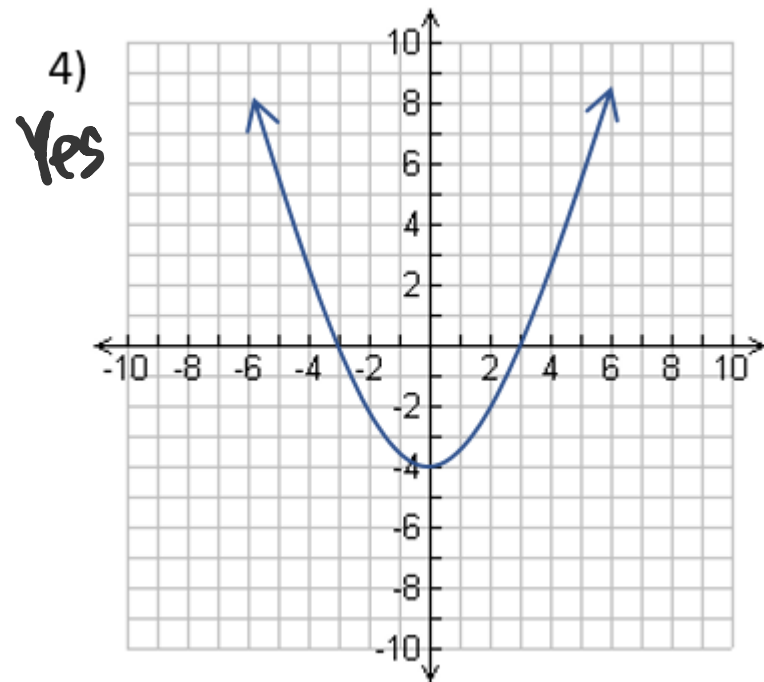
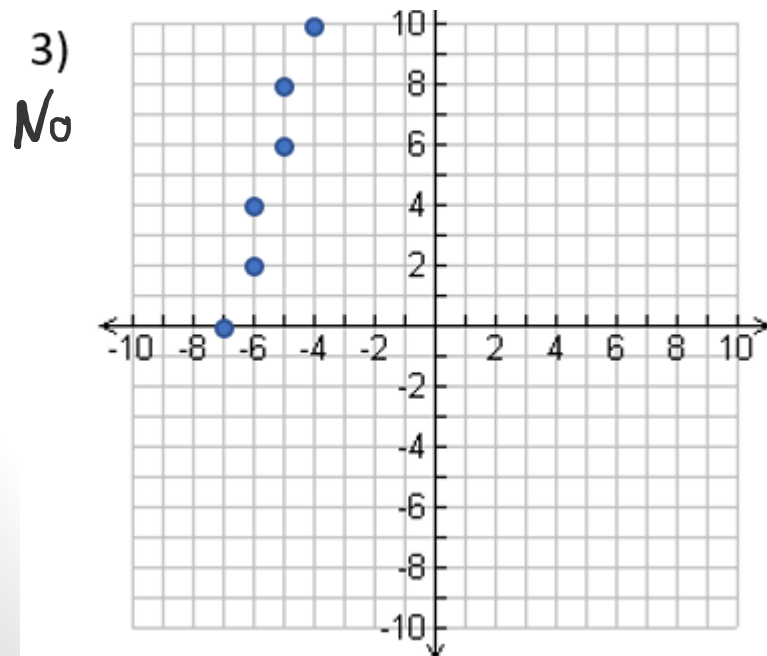
Decide if each is a function. Explain why or why not.

1) *Yes*

x	1	2	3	4	5
y	20	25	29	31	32

2) *No*

x	2	3	4	2	3
y	32	34	36	38	40



\*\*\*\*\*EVERYONE NEEDS A  
WHITEBOARD, MARKER,  
ERASER!!!\*\*\*\*\*

**PLEASE FIND YOUR  
“ZERO AND NEGATIVE  
EXPONENTS” PAGE OF  
NOTES!!!**

# What about:

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

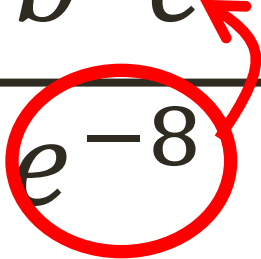
$$= 1 \div \frac{1}{x^5}$$

$$= 1 \cdot \frac{x^5}{1}$$

$$= \boxed{x^5}$$



How would you rewrite this?

$$\frac{3a^4b^5c^6d^7}{e^{-8}}$$


$$3a^4b^5c^6d^7e^8$$

» If the negative exponent is already in the denominator, it moves back up to the numerator.

$$\frac{1}{x^{-5}} \rightarrow x^5$$



$$\frac{e^0 w^1 u^{-2} h^3 p^{-5} t^6 s^7}{a^{-4}}$$

$$\frac{w^1 h^3 a^4 t^6 s^7}{u^2 p^5}$$

Simplify:



$$\gg \frac{-3x^2y^{-4}}{z} \longrightarrow \frac{-3x^2}{y^4z}$$

$\downarrow$   
 ~~$\frac{x^2}{-3y^4z}$~~

» Only negative **exponents** move to the denominator. Not negative coefficients.

By the way...



# What about:

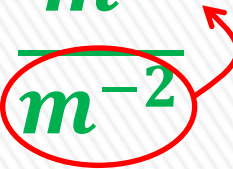
$$\frac{m^4}{m^{-2}}$$

2 Methods:

Shortcut

$$\begin{aligned}\frac{m^4}{m^{-2}} \\&= m^{4-(-2)} \\&= m^6\end{aligned}$$

Moving Neg. Exponent First

$$\frac{m^4}{m^{-2}}$$


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

$$= m^6$$





$$\frac{c^2 d^5}{c^5 d^2} = \frac{\cancel{c} \cdot \cancel{c} \cdot d \cdot d \cdot d \cdot \cancel{d} \cdot \cancel{d}}{\cancel{c} \cdot \cancel{c} \cdot c \cdot c \cdot c \cdot \cancel{d} \cdot \cancel{d}}$$

$$= \boxed{\frac{d^3}{c^3}}$$

↓

$$= c^{-3} d^3$$

$$= \boxed{\frac{d^3}{c^3}}$$

On your whiteboard: ➡

$$\frac{q^3 q^{-4}}{q^2}$$

$$= \frac{q^3}{q^2 \cdot q^4} = \frac{q^3}{q^6} = \frac{1}{q^3}$$

On your whiteboard: ➤

1.  $3^4$  81

2.  $(-4)^4$  256

3.  $2^{-3}$   $\frac{1}{8}$

4.  $7^0$  1

5.  $-12^2$  -144

Evaluate each:



# Activity: Exponent Expression Sort

- » Your group will get a bag with 21 expressions in it.
- » These 21 expressions will split into 6 groups of equivalent expressions.
- » For example,  $x^4 \cdot x$  and  $\frac{x^9}{x^4}$  would go in the same group. However,  $(x^3)^2$  would go in a different group.
- » One person will keep track of which expressions go where on the handout. However, **ALL** group members will participate verbally!
- » **EARLY FINISHER 1:** Your group will get 9 more expressions. Some of these will form a 7<sup>th</sup> group, and others will go into the previous groups.
- » **EARLY FINISHER 2:** Come up with your own NEW expressions that would go in the groups. Be as creative as you want.

- » On Tuesday, we are doing a big review activity called “Levels”
- » I will need 3 or 4 “student checkers.” Instead of doing the activity, they will be checking everyone else’s work.
- » These should be students who understand these problems very well and would be able to help students who are stuck.
- » What’s the catch???
- » If you want to be a checker, you must do the activity as homework this weekend.
- » If you are interested in being a checker, come to my desk.

# Tuesday’s Activity...



# Homework

Shortcuts vs. Expanding Worksheet