

## What's Going On?

**Checking In** F.F.M.

**Minds on** What's Your Problem?

**Action!** Investigation

**Consolidation** GSP Demo

**Learning Goal - I will understand the role of  $b$  in  $y = b^x$ .**

## Checking In

Mid-Unit Review Hand In Questions  
Extension Until Tomorrow

Checking In

# F.F.M.

$$\begin{aligned}
 & \frac{\sqrt[6]{(4x^6)^2}}{\sqrt[4]{625x^8}} \\
 &= \frac{\left((4x^6)^2\right)^{\frac{1}{6}}}{(625x^8)^{\frac{1}{4}}} \\
 &= \frac{(64x^{12})^{\frac{1}{6}}}{\sqrt[4]{625} x^{8 \cdot \frac{1}{4}}} \\
 &= \frac{\sqrt[6]{64} x^{12 \cdot \frac{1}{6}}}{5x^2} \\
 &= \frac{2x^2}{5x^2} \leftarrow \\
 &= \frac{2}{5} x^{2-2} \\
 &= \frac{2}{5} x^0 \\
 &= \frac{2}{5}
 \end{aligned}$$

Minds on

# What's the difference?

		First Differences	Second Differences	Third Differences
x	y			
-2	-7	-3	0	0
-1	-3	4	0	0
0	1	4	0	0
1	5	4	0	0
2	9	4		
3	13			
x	y			
-2	2	-3	2	0
-1	-1	-1	2	0
0	-2	+1	2	0
1	-1	+3	2	0
2	2	+5	2	0
3	7			
x	y			
-2	0.0625	0.1875	0.5625	1.6875
-1	0.25	0.75	2.25	6.75
0	1	3	9	27
1	4	12	36	
2	16	48		
3	64			

Purple Card

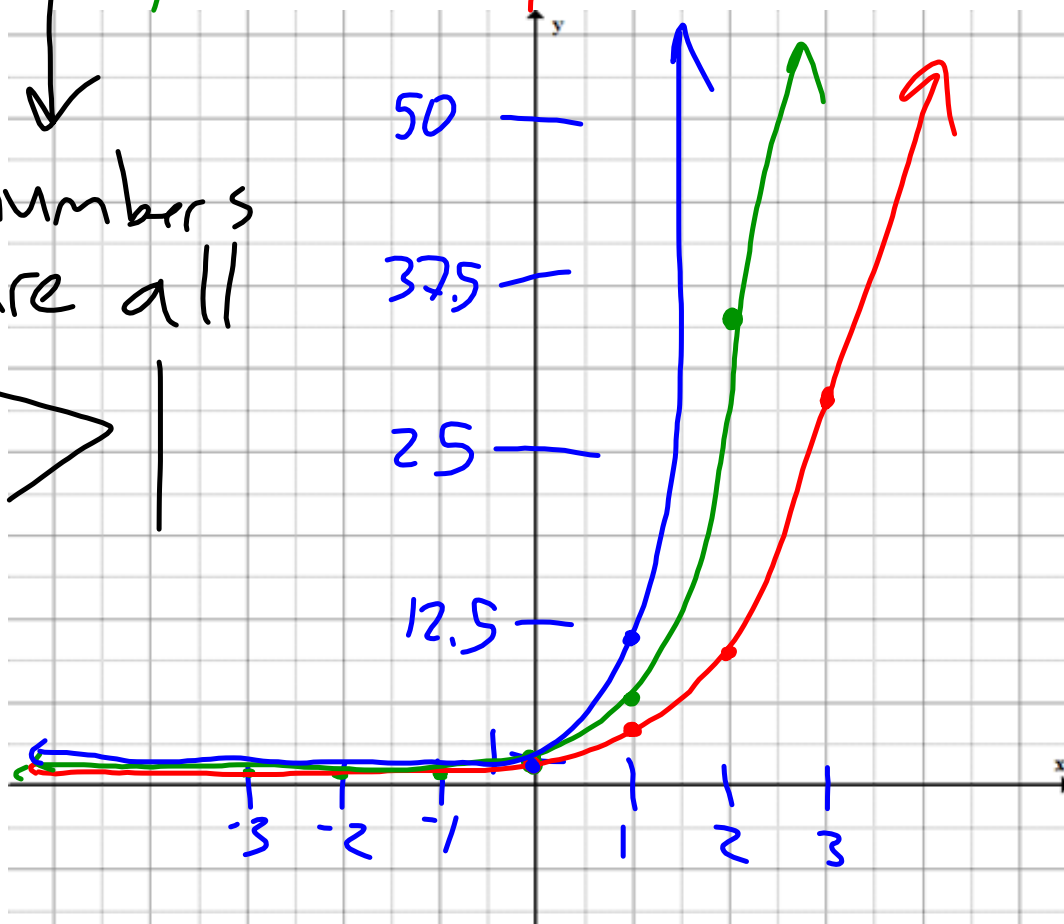
$$y = 6^x$$

$$y = 3.1^x$$

$$y = 11^x$$

numbers  
are all

> |

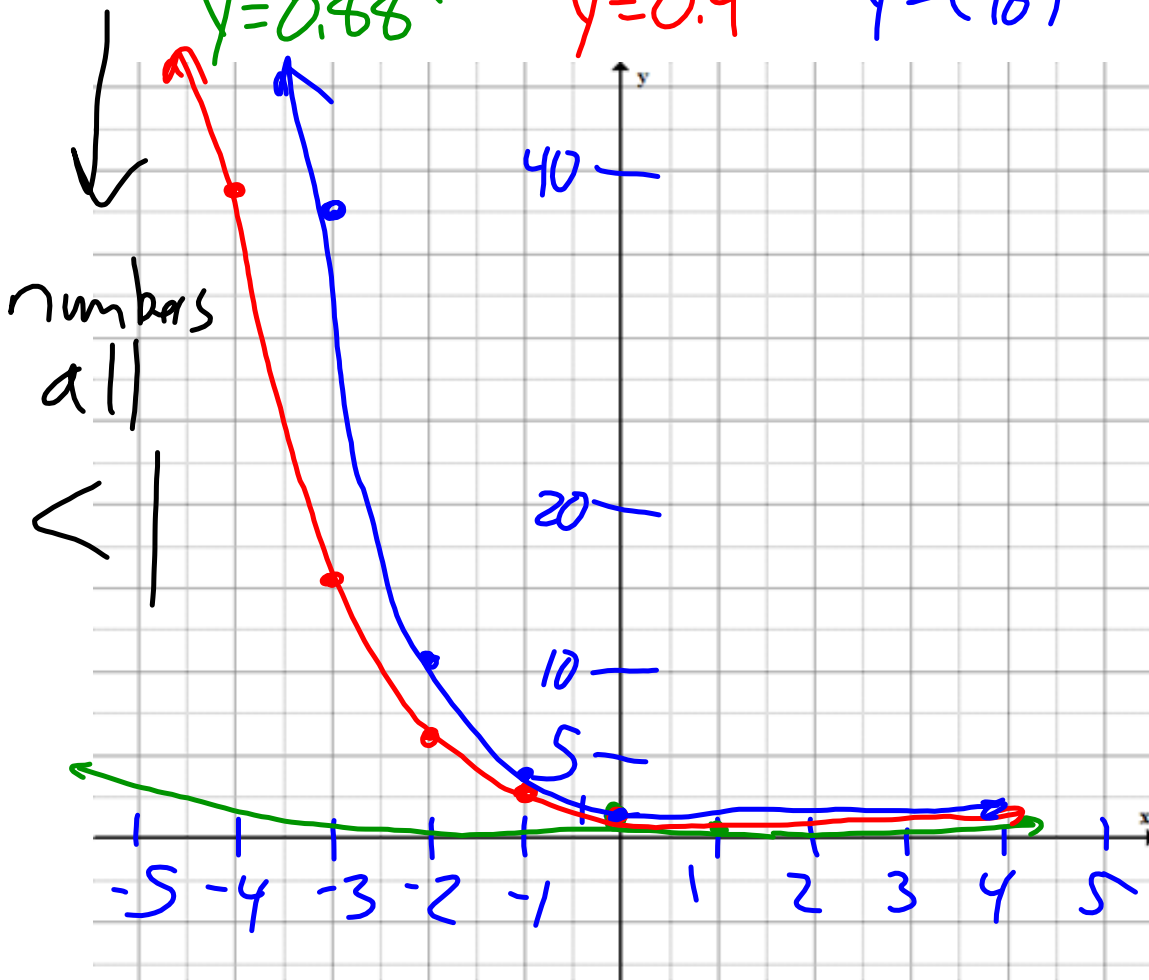


Blue Card

$$y = 0.88^x$$

$$y = 0.4^x$$

$$y = \left(\frac{3}{10}\right)^x$$



**Action!**

## Investigation

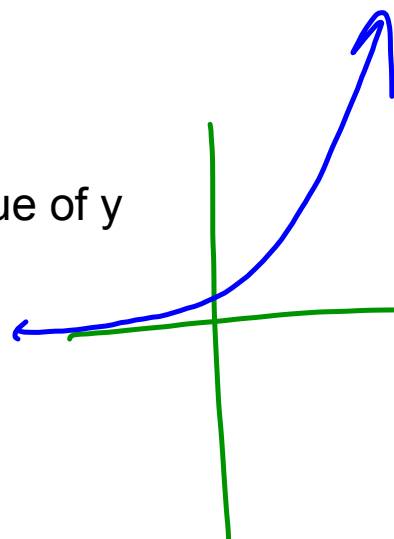
Task #4: With your partner, answer the following questions:

1. What did you notice for  $b > 1$ ?

As the value of  $x$  increased, the value of  $y$  increases.

And vice versa.

This also had an asymptote at  $y = 0$

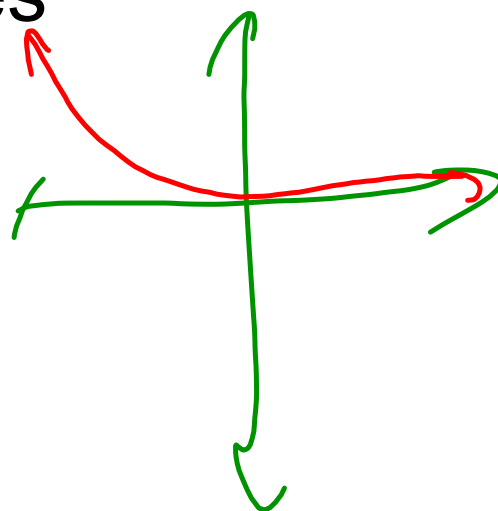


2. What did you notice for  $0 < b < 1$ ?

(fraction)

Decreases to the right, as  $x$   
increases,  $y$  decreases

Asymptote at  $y = 0$





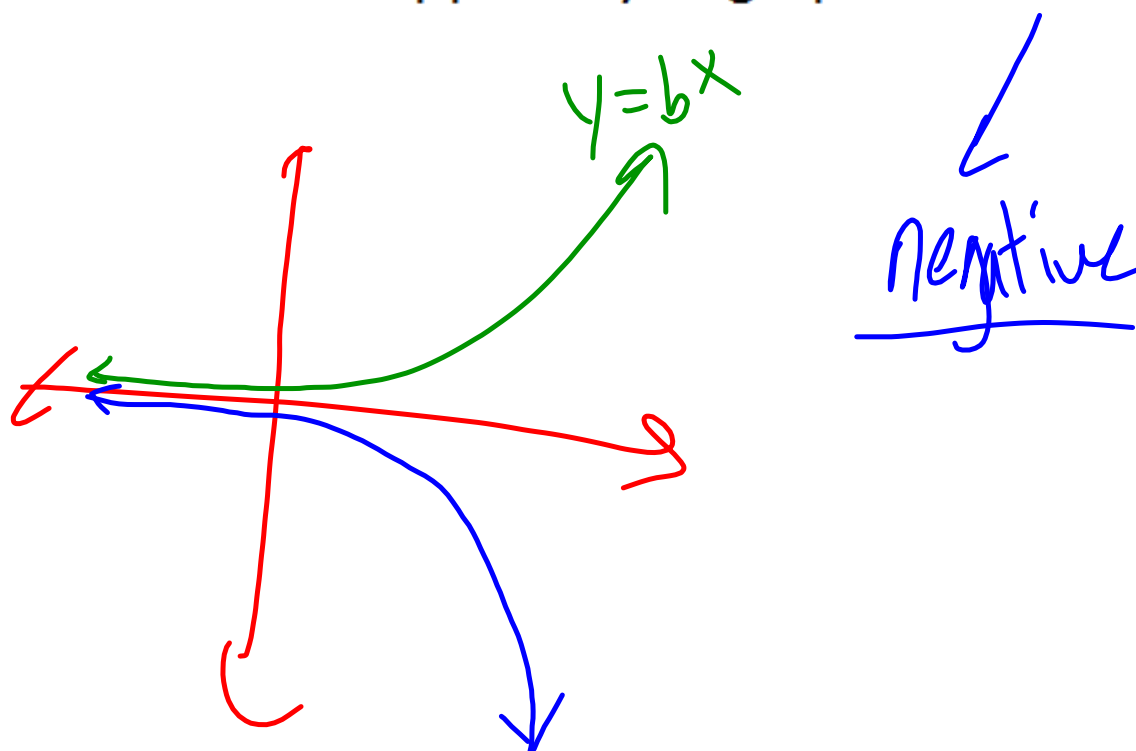
3. What would happen if you graphed  $b = 1$ ?

horizontal line

$$y = 1$$

$$b^x \\ (1)^x \\ = 1$$

4. What would happen if you graphed  $b < 0$ ?



Reflect in x-axis (upside down)

5. Circle the steepest graph:

$$y = 2^x$$

$$y = 5^x$$

$$y = 10^x$$

$$y = 15^x$$

Explain your 'rule':

6. Circle the steepest graph:

$$y = 0.6^x$$

$$y = 0.5^x$$

$$y = 0.4^x$$

$$y = 0.3^x$$

Explain your 'rule':

7. Circle the steepest graph:

$$y = -2^x$$

$$y = -0.5^x$$

$$y = 0.5^x$$

$$y = \frac{1}{2}2^x$$

Explain your answer:

**Consolidation**

# G.S.P. Demo

# Homework

Pg. 243

1 - 2

\*Notes Pg 242

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## Attachments

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3U Exponential Functions - Day 3 (Properties of Exponential Functions) - Investigation.gsp