

Aim: How do we graph exponential functions?

I. Do Now:

1. Complete the tables and graph the functions on the same set of axes below:

(a)

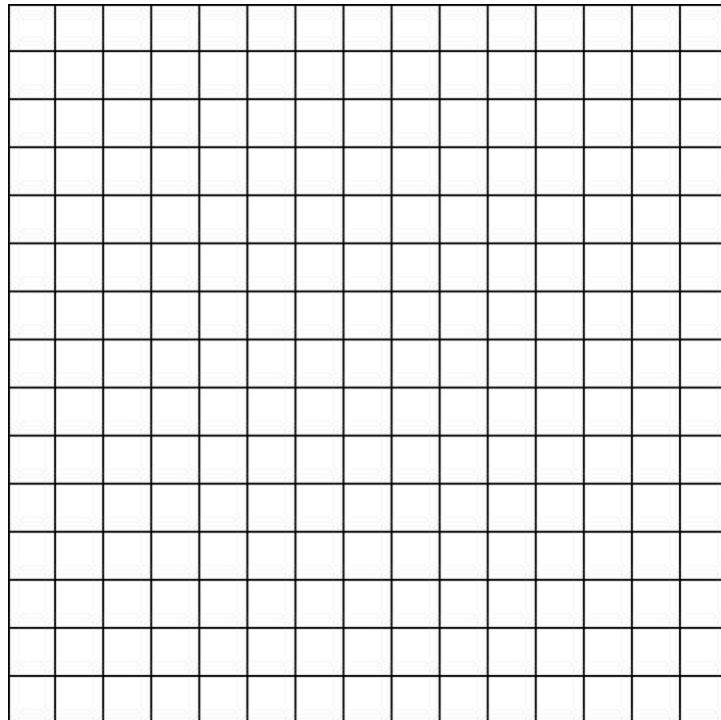
x	$y = 2^x$	(x, y)
-2		
-1		
0		
1		
2		

(b)

x	$y = 3^x$	(x, y)
-2		
-1		
0		
1		
2		

(c)

x	$y = 10^x$	(x, y)
-2		
-1		
0		
1		
2		



II. Observations:

Exponential functions are in the form $y = b^x$, where $b > 0$ and $b \neq 1$.

Properties of Exponential Functions:

- | | |
|----|----|
| 1. | 5. |
| 2. | 6. |
| 3. | 7. |
| 4. | |

Recall that e is the irrational number approximately equal to 2.718.

What would the graph of $y = e^x$ look like? _____

III. Transformations of Exponential Functions

For each function, sketch the graph, describe the transformation of the parent graph $y = 2^x$, and state the domain and range.

- | | | |
|------------------|--------------------------------|--|
| 2. $y = 2^{-x}$ | 6. $y = 2^x + 3$ | 10. $y = 2^{x-4} + 3$ |
| 3. $y = -2^x$ | 7. $y = 2^{3x}$ | 11. $y = \left(\frac{1}{2}\right)^{x+2} + 1$ |
| 4. $y = 2^x - 1$ | 8. $y = 2 \cdot 2^x$ | 12. $y = 10 - 2^{x+5}$ |
| 5. $y = 2^{x+1}$ | 9. $y = \frac{1}{2} \cdot 2^x$ | 13. $y = 2^{0.5x+2} - 4$ |