

growth - bigger
 Started slowly & increased faster as it grew more
 didn't grow at same rate the whole time

decay - smaller
 never reached zero

decreased rapidly at first then the decay slowed

#'s in eq were close but not the same.

* experimental errors

$$y = \frac{a}{b} * \left(\frac{1}{b}\right)^x$$

a = initial amount

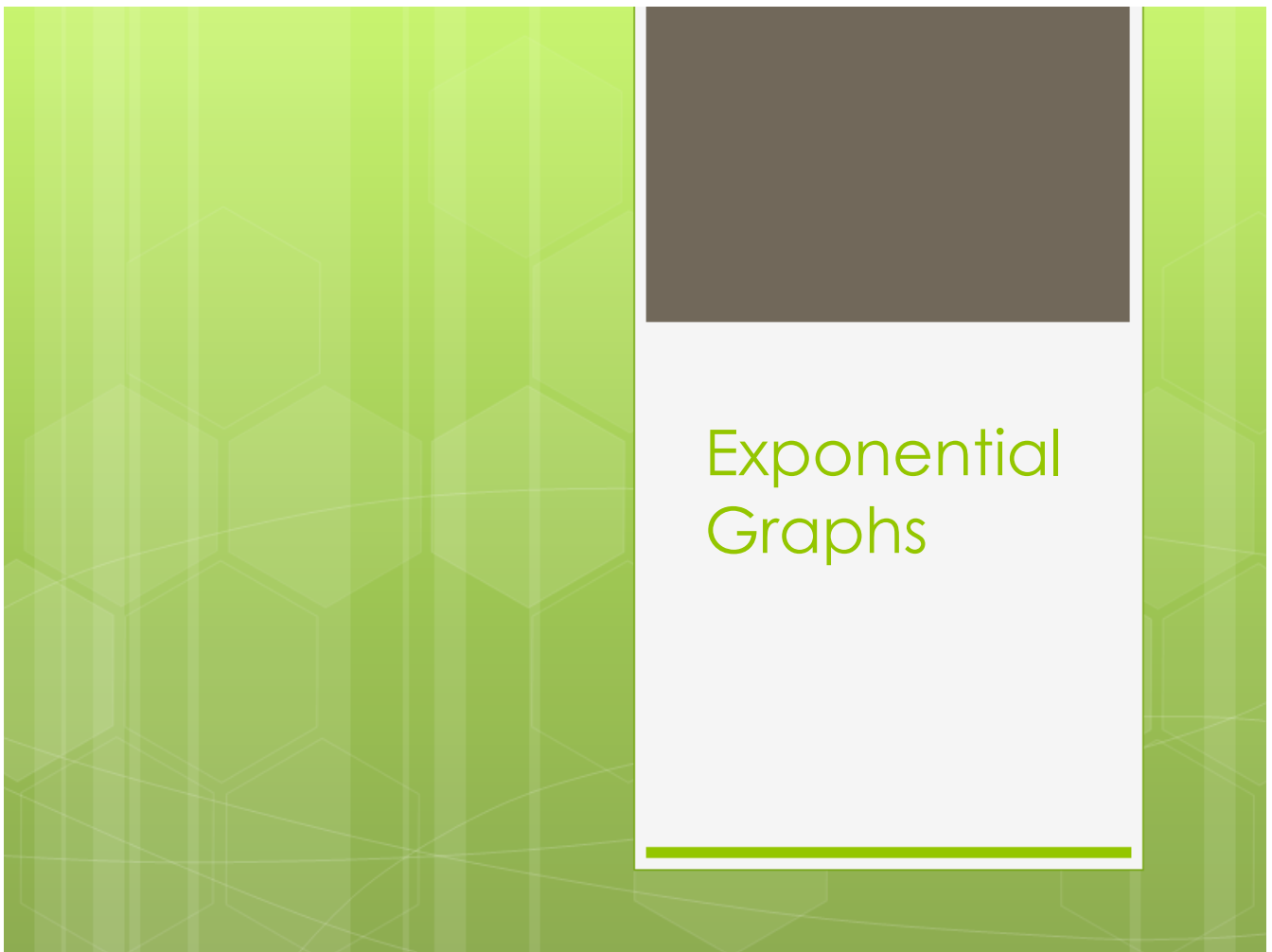
b = growth factor

growth:
 Starts w/ 1.
 increases
 Bigger than each other

decay:

fluctuates
 Starts w/ 0.
 lower than 0.5
 Less than 1
 Can't be zero

	<u>growth</u>	<u>decay</u>
b	1.01	
	1.5	
	1.5	0.4
	1.9	0.3
		0.4



Graph:

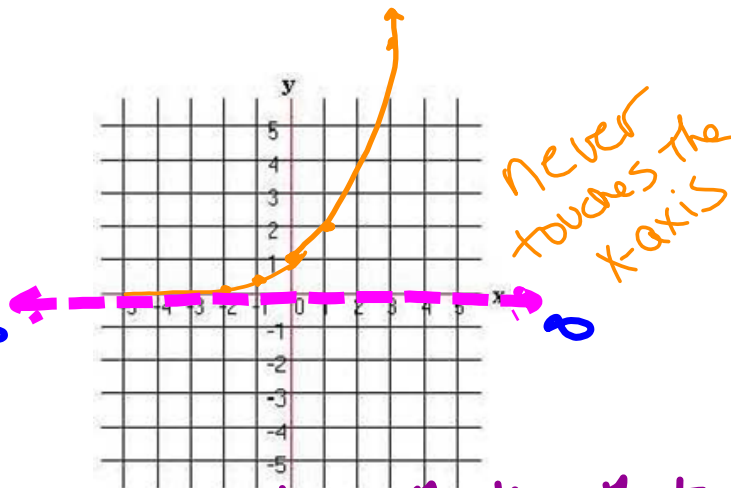
$$y = 2^x$$

Variable is in the exponent

x	y
0	1
1	2
3	8
-1	$\frac{1}{2}$
-2	$\frac{1}{4}$

$$2^{-1} = \frac{1}{2}$$

$$2^{-2} = \frac{1}{4}$$



Asymptote: the line that the graph approaches but never touches

Domain: $(-\infty, \infty)$

Range: $(0, \infty)$

$$y = 3^x \quad \begin{array}{c|c} x & y \\ \hline 0 & 1 \\ 1 & 3 \end{array}$$

$$y = 10^x \quad \begin{array}{c|c} x & y \\ \hline 0 & 1 \\ 1 & 10 \end{array}$$

$(0, 1)$ is on

$$y = 2.5^x \quad \begin{array}{c|c} x & y \\ \hline 0 & 1 \\ 1 & 2.5 \end{array}$$

the graph of every parent function.

Graph:

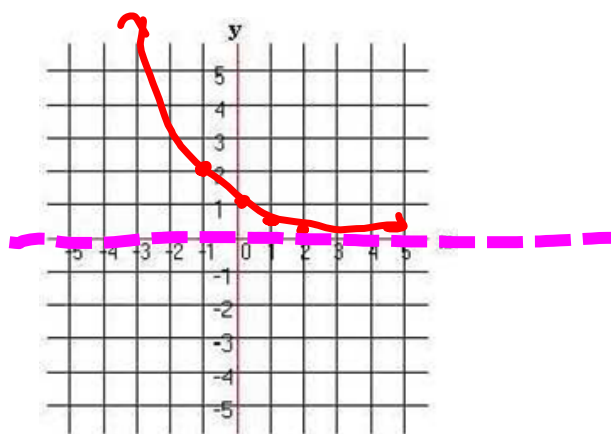
$$y = 2^{-x}$$

x	y
0	1
1	$\frac{1}{2}$
-1	2
2	$\frac{1}{4}$

$$2^{-1}$$

$$2^{-(-1)}$$

$$2^{-2} = \frac{1}{2^2}$$



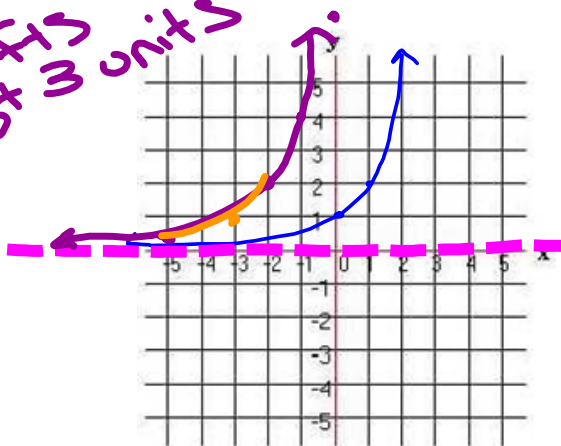
Domain: $(-\infty, \infty)$
Range: $(0, \infty)$

Graph:

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

Shifts
left 3 units

x	y
-2	2
-1	4
0	8
1	16
2	32
-5	$\frac{1}{4}$



Domain:

Range:

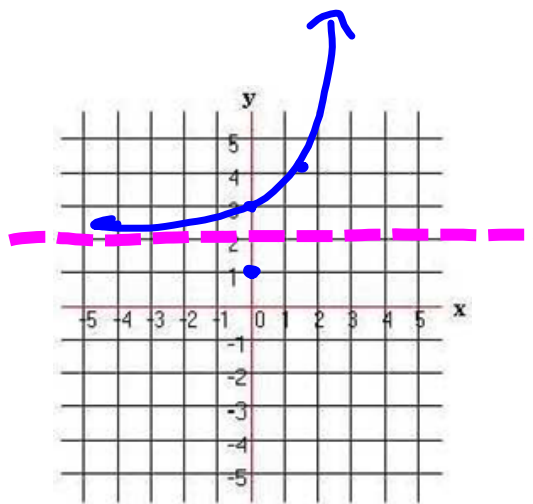
Graph:

$$y = 2^x + 2$$

↑
up 2

2^x + left
- Right

+ up
- down



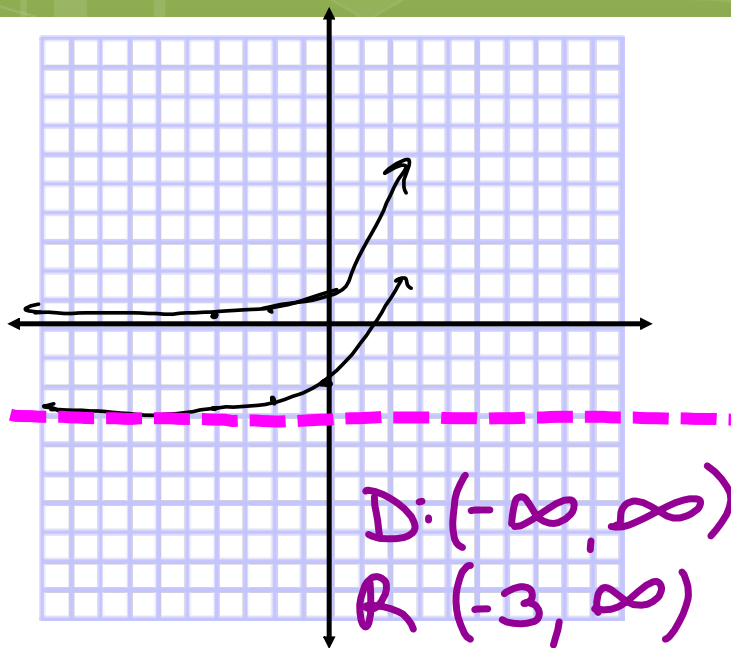
Domain:
Range:

$$2^x = \frac{1}{16}$$

$$2^x = \frac{1}{4}$$

$$2^x - 3$$

x	y
-4	$-\frac{47}{16}$ (-2.9375)
-2	$-\frac{11}{4}$ (-2.75)

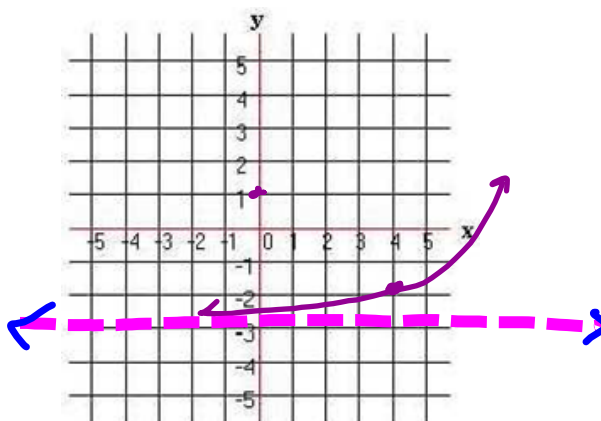


D: $(-\infty, \infty)$
R: $(-3, \infty)$

Graph:

$$y = 2^{x-4} - 3$$

Right 4
Down 3



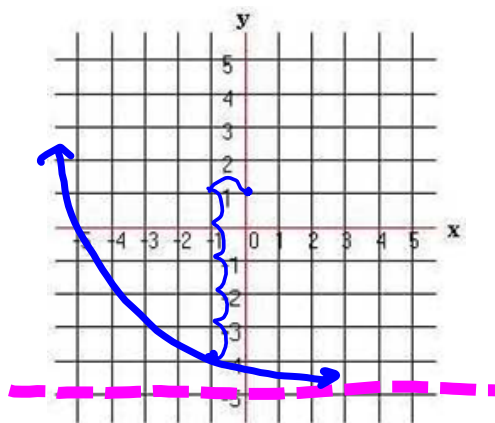
Domain:

Range:

Graph:

$$y = 2^{-x-1} - 5$$

Decay \rightarrow 2^{-x-1} \leftarrow Left +1
-5 \uparrow Down 5

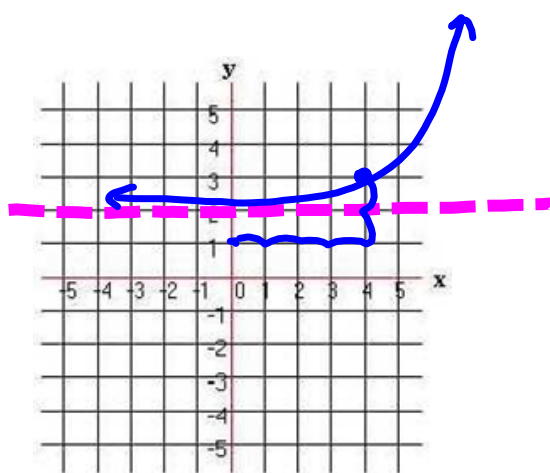


Domain:
Range:

Graph:

$$y = 2^{x-4} + 2$$

Handwritten annotations: $\leftarrow R+4$ (pointing to the exponent) and $UP \uparrow 2$ (pointing to the constant term).



Domain:

Range: