

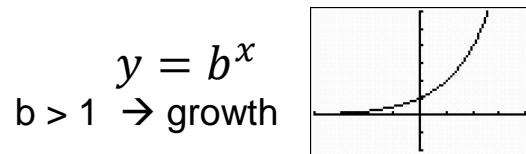
SM3-A Lesson 1-7 VOCABULARY (Exponential Function)

Growth Factor is the base of the exponential. For $f(x) = 2^x$ the growth factor is '2'.

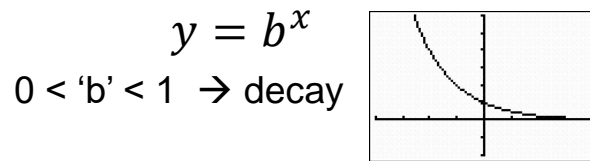
For $y = b^x$ the growth factor is 'b'

Horizontal Asymptote: a horizontal line the graph approaches but never reaches.

Exponential Growth: the graph is increasing (as you go from left to right the graph goes upward).
Growth occurs when the base of the exponential is greater than 1;



Exponential Decay: the graph is decreasing (as you go from left to right the graph goes downward).
This occurs when the base of the exponential is between 0 and 1.



Base of the exponential function: can only take on the values $0 < b < 1$, OR $b > 1$
 $b = (0,1) \cup (1, \infty)$

Transformation Form of the Exponential Function

$$y = ab^x + k$$

VSF; y-intercept: $(0, a + k)$ \uparrow \leftarrow vertical shift and horizontal Asymptote
Growth Factor (the base of the exponential)

Initial Value: (of the exponential) is the vertical stretch factor (for problems with no up/down shifts)