

Exponential Functions

$$y = a b^x$$

b \nwarrow
 base
 x \swarrow
 exponent
 a \uparrow
 initial value when $x=0$

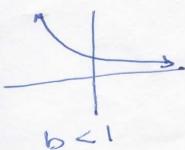
(a) an initial amount being multiplied by the same positive number.
 (b) the exponent, x , represents the number of times "b" is being multiplied

initial amount "a" has to be non zero $a \neq 0$
 "b" has to be a positive number $(b > 0)$
 and not equal to 1 $(b \neq 1)$

TWO CASES where r is the decimal value of % increase or decrease



growth
 expressed as % increase
 25% increase $\Rightarrow r = .25$
 % increase is decimal value added to 1
 ex) 30% increase $\rightarrow r = +.30$
 $b = 1 + r = 1 + .30 = 1.3$



decay
 expressed as % decrease
 25% decrease $\Rightarrow r = -.25$
 % decrease is decimal value subtracted from 1
 $b = 1 + r = 1 - .25 = .75$