GRADE 12 APPLIED
UNIT C –FUNCTIONS
EXPONENTIAL FUNCTIONS

MrF

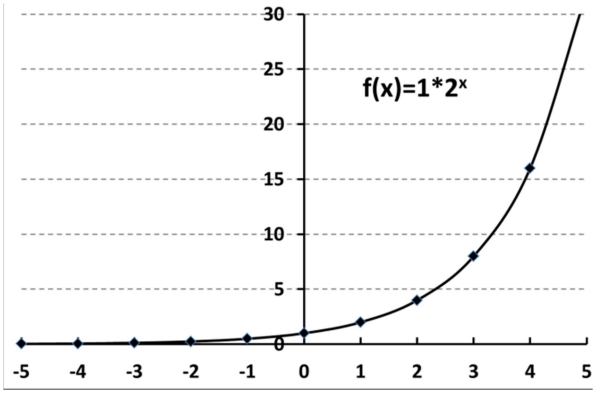
Name: _____
Date: _____

1. Exponential functions are of the form:

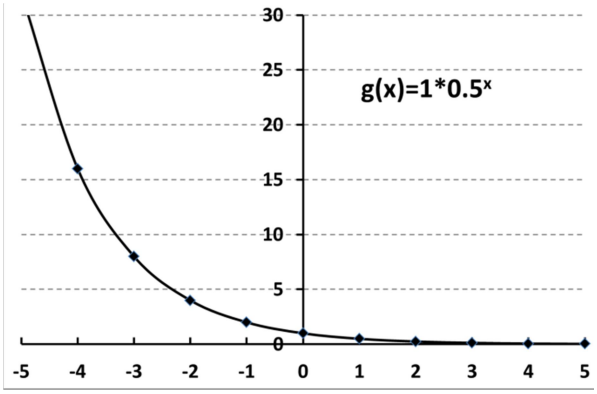
$$\mathbf{f(x) = ab^x;}$$

where the ***a*** coefficient is any real value of number; the ***b*** [base], is any positive number, and the variable ***x*** is any real number.

In such an exponential relationship the function grows increasingly rapidly upward to the right if the b is greater than 1 (if b>1) or it decays decreasingly slowly if the b is less than 1 (b<1).



Exponential Growth



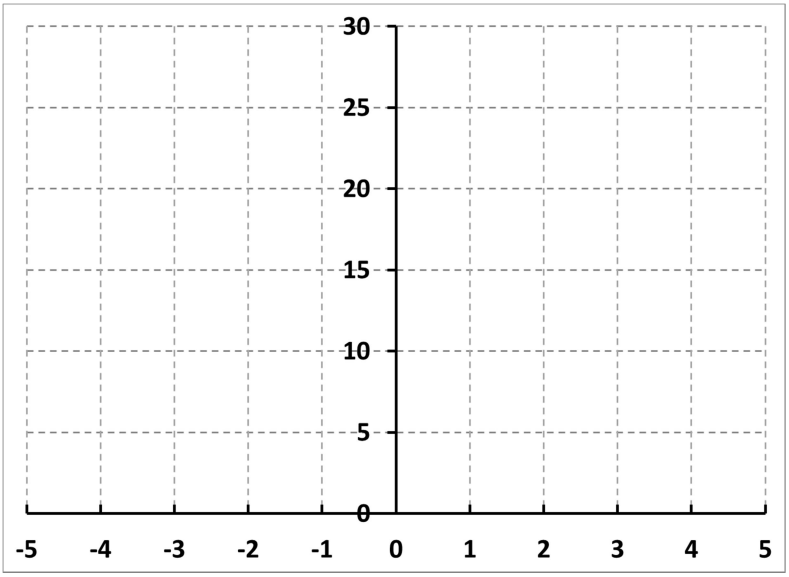
Exponential Decay

2. Manually graph the exponential function in the domain $-5 \leq x \leq 5$

$f(x) = 0.1 * 3^x$

x	y
-5	
-2	
0	
2	
5	

Re-scale the y axis as necessary



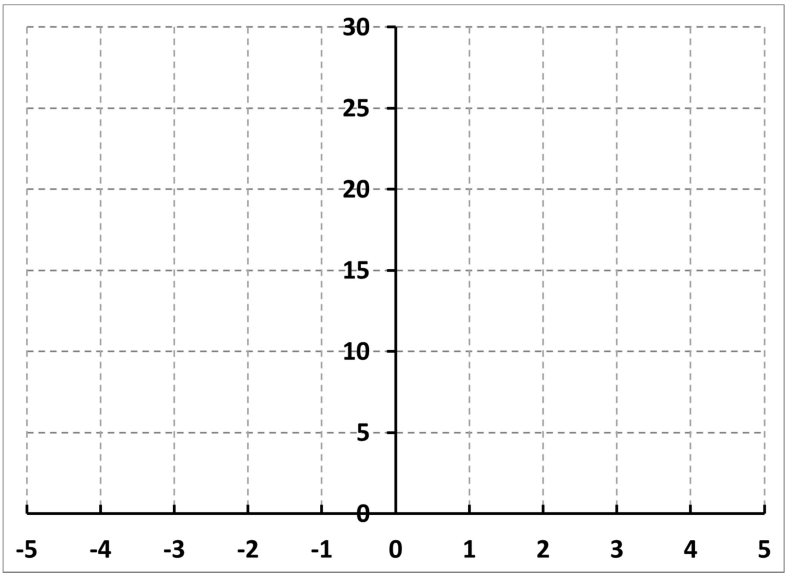
What is the range of the entire function? (not just the portions we have graphed)

_____ < y < _____

3. Manually graph the exponential function in the domain $-5 \leq x \leq 5$

$g(x) = 4 * 0.2^x$

x	y
-5	
-2	
0	
2	
5	



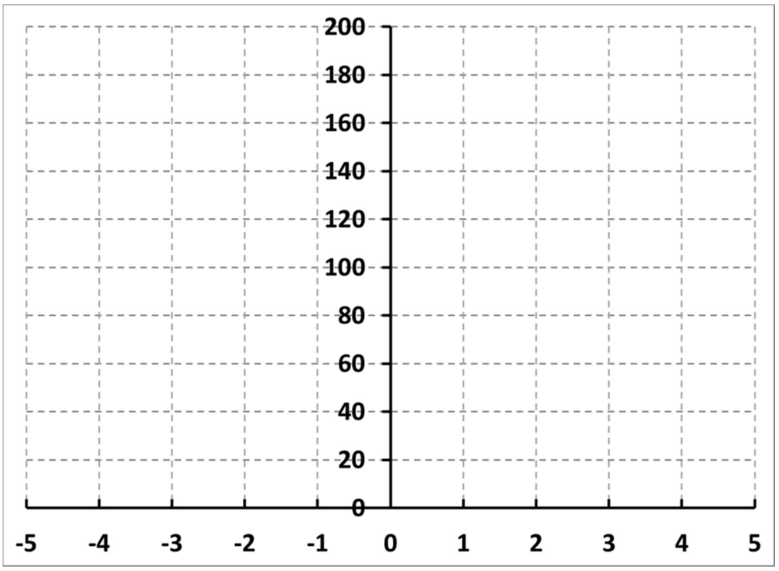
Re-scale the y axis as necessary

What is the range of the entire function? (not just the portions we have graphed)

_____ < g(x) < _____

4. Solve the exponential equation by manually graphing. (check with a graphing tool) (make your own table)

$150 = 0.25(5)^x$



Solve the following exponential functions using a graphing tool and give a very simple sketch ('back of a cigarette pack') of the solution.

a. $100 = 4 * 5^x$
x = _____

b. $2000 = 1000*(1+0.06)^x$
investment @6% compounded annually x = _____

c. $500 = 15000*0.8^x$
car depreciation x = _____