Exponential Functions

2.   Infections seldom start with a single bacterium. Suppose that you cut yourself on a rusty nail that puts **10 bacteria** cells into the wound. Suppose also that those bacteria **triple** after every quarter of an hour. (Assume that your body does not fight off the infection and you do not apply medication.)

a.   Complete the table below

Number of quarter hour periods	0	1	2	3	4	5
Number of Bacteria in the Cut						

b.   Write a recursive rule showing how the number of bacteria changes from one quarter-hour to the next, starting from 10 at time 0.

c.   Write a rule showing how to calculate the number of bacteria N in the cut after x quarter-hour time periods.

d   Use the rule in either Parts b or c to calculate the number of bacteria after 3 hours.

1.   If a basketball is properly inflated, it should rebound to about $\frac{3}{4}$ the height from which it is dropped.

a.   Make a table showing the pattern to be expected in the first 5 bounces after a ball is dropped from a height of 10 feet.

Bounce	1	2	3	4	5
Height					

b.   Write a recursive rule and a rule beginning "$y = ...$" that can be used to calculate the rebound height after many bounces

c.   At which bounce will the ball first rebound less than 1 foot?

x	0	1	2	3
y	5	10	20	40

1. Write the recursive rule and the explicit/function rule for the table above.

Function Notation and Exponential Functions

x	0	1	2	3	4	5	6
y	1	3	9	27	81	243	729

Use the table above to find:

   a.) f(0) =   b.) f(2)=   c.) f(x) = 81   d.) f(x) = 729

Use the equation, $f(x) = 3(2)^x$ to find the following

   a. f(1) =   b.) f(2) =   c.) f(x) = 24   d.) f(x) = 48