

Linear Versus Exponential

Linear  
 $y = mx + b$

Table A	
x	y
0	-1
1	0
2	1
3	2

+1  
+1  
+1

Linear  
 Equation  $y = x - 1$

Exponential

$a b^x$   
 ↑ first    ↑ change

Table B	
x	y
0	1/3
1	1
2	3
3	9

x 3  
x 3  
x 3

Equation  $f(x) = \frac{1}{3}(3)^x$   
 exponential

Table C	
x	<del>y</del> f(x)
0	30
1	21
2	12
3	3

+1  
+1  
-9  
-9  
-9

$\frac{3}{27} = \frac{1}{9}$

Equation  $y = -9x + 30$

Linear  
 $f(x) = -9x + 30$

$\frac{\Delta y}{\Delta x} = \frac{-9}{1}$

Table D	
x	y
0	2187
1	243
2	27
3	3

x 1/9  
x 1/9  
x 1/9

Equation  $f(x) = 2187\left(\frac{1}{9}\right)^x$

Table A	
x	y
0	
1	
2	
3	

x	y
2	10
3	14
6	26

Handwritten annotations on the table:
 

- Blue arrows: From (2, 10) to (3, 14) with label +4; from (3, 14) to (6, 26) with label +12.
- Green arrows: From (2, 10) to (6, 26) with label +12; from (3, 14) to (6, 26) with label +12.

$$\frac{\Delta y}{\Delta x} = \frac{4}{1} = \frac{12}{3} = \frac{4}{1}$$