


Algebra 1

Comparing Linear, Exponential and Quadratic Models



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Linear Functions


$$y = mx + b$$

Exponential Functions

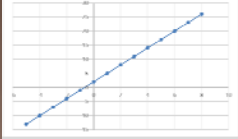
$$y = ab^x$$

Quadratic Functions

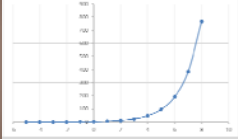
$$y = ax^2 + bx + c$$

Overview 

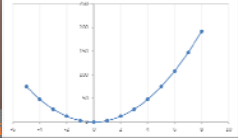
Linear Functions


$$y = mx + b$$
$$y = 3x + 2$$


Exponential Functions

$$y = ab^x$$
$$y = 3(2)^x$$


Quadratic Functions

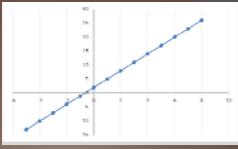
$$y = ax^2 + bx + c$$
$$y = 3x^2$$


Comparing Linear, Exponential and Quadratic Models 

Linear Functions

$y = mx + b$

$y = 3x + 2$



x	y	Difference
-5	-13	
-4	-10	3
-3	-7	3
-2	-4	3
-1	-1	3
0	2	3
1	5	3
2	8	3
3	11	3
4	14	3
5	17	3
6	20	3
7	23	3
8	26	3

$y = 3x + b$

$8 = 3(2) + b$



$8 = 6 + b$

$8 - 6 = b$

$2 = b$

$y = 3x + 2$


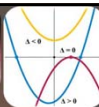
Comparing Linear, Exponential and Quadratic Models

The data in this table represents what type of function? Write an equation for the function.

x	y	Difference
-4	-5	
-3	-3	
-2	-1	
-1	1	
0	3	
1	5	
2	7	
3	9	
4	11	

You Try It

$y = 2x + b$

$3 = b(0) + b$

$y = 2x + 3$

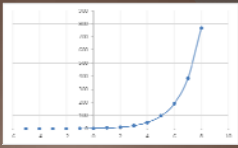
The data in this table represents what type of function? Write an equation for the function.

x	y	Difference
-4	-5	
-3	-3	2
-2	-1	2
-1	1	2
0	3	2
1	5	2
2	7	2
3	9	2
4	11	2

You Try It

Exponential Functions

$y = ab^x$
 $y = 3(2)^x$



x	y	Difference	Ratio
-5	0.0938		
-4	0.1875	-0.09375	2
-3	0.375	-0.1875	2
-2	0.75	-0.375	2
-1	1.5	-0.75	2
0	3	-1.5	2
1	6	-3	2
2	12	-6	2
3	24	-12	2
4	48	-24	2
5	96	-48	2
6	192	-96	2
7	384	-192	2
8	768	-384	2

$y = a2^x$
 $3 = a2^0$
 $3 = a(1)$
 $3 = a$
 $y = 3(2)^x$

Comparing Linear, Exponential and Quadratic Models

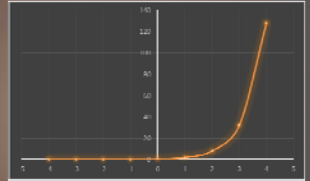
Determine what type of function is represented in this table, and write an equation for the function.

x	y
-4	0.002
-3	0.0078
-2	0.0313
-1	0.125
0	0.5
1	2
2	8
3	32
4	128

You Try It

Determine what type of function is represented in this table, and write an equation for the function.

x	y	ratio
-4	0.002	
-3	0.0078	
-2	0.0313	
-1	0.125	
0	0.5	4
1	2	4
2	8	4
3	32	4
4	128	4



$y = ab^x$
 $2 = a(4)^1$
 $2 = a(4)$
 $0.5 = a$
 $y = 0.5(4)^x$

You Try It
