

Linear vs Exponential Functions

Do Now

Directions: For each table, identify the function it represents (linear or exponential), then write the equation in $y = mx + b$ form (linear) or $y = a(b)^x$ form (exponential).

$m = \text{slope}$ $b = y\text{-int}$ Constant rate of change $a = y\text{-int}$ $b = \text{ratio (multiplier)}$

1. linear $bc +$

x	f(x)
-1	5
0	9
1	13
2	17

$m = 4$
 $b = 9$
 $y = mx + b$
 $y = 4x + 9$

2. exponential $bc \cdot$

x	f(x)
-1	36
0	18
1	9
2	4.5

$b/r = \frac{1}{2}$
 $a = 18$
 $y = a(b)^x$
 $y = 18 \cdot \frac{1}{2}^x$

3. exponential $bc \cdot$

x	f(x)
-1	7
0	21
1	63
2	189

$b/r = 3$
 $a = 21$
 $y = a(b)^x$
 $y = 21 \cdot 3^x$

4. linear $bc + -$

x	f(x)
-1	-10
0	-15
1	-20
2	-25

$m = -5$
 $b = -15$
 $y = mx + b$
 $y = -5x - 15$

5. exponential $bc \cdot$

x	f(x)
-1	-2
0	-10
1	-50
2	-250

$r = 5$
 $b = -10$
 $y = a \cdot b^x$
 $y = -10 \cdot 5^x$

6. linear $bc +$

x	f(x)
-1	-16
0	-10
1	-4
2	2

$m = 6$
 $b = -10$
 $y = mx + b$
 $y = 6x - 10$

7. exponential $bc \cdot$

x	f(x)
-1	3
0	30
1	300
2	3000

$r = 10$
 $b = 30$
 $y = a \cdot b^x$
 $y = 30 \cdot 10^x$

8. exponential $bc \cdot$

x	f(x)
-1	81
0	27
1	9
2	3

$r = \frac{1}{3}$
 $b = 27$
 $y = a(b)^x$
 $y = 27 \cdot \frac{1}{3}^x$

To check a calc: **STAT** **1: Edit** type # in to y_1, y_2 . then do **STAT** **1**.

4: LinReg for linear and **0: ExpReg** for exponential