

Slope + Linear:
 $y = mx + b$
 $y = y_1 + m(x - x_1)$

Exponential:
 $y = (\text{start})(\text{ratio})^x$

Writing Equations Practice

Name: Key

For each of the following, complete the table, then write an explicit equation.

1. 7, 10, 13, 16, ...

x	y
1	7
2	10
3	13
4	16
5	19

$m = \frac{3}{1}$

$y = 7 + 3(x - 1)$

2. 90, 30, 10, $\frac{10}{3}$, ...

x	y
1	90
2	30
3	10
4	$10/3$
5	$10/9$

$r = \frac{1}{3}$

$y = 90(\frac{1}{3})^{x-1}$

3. 90, 75, 60, 45, ...

x	y
1	90
2	75
3	60
4	45
5	30

$m = \frac{-15}{1}$

4. $f(1) = 16$
 $f(n) = -3f(n-1)$

x	y
1	16
2	-48
3	144
4	-432
5	1296

$r = -3$

$y = 16(-3)^{x-1}$

5. $f(0) = -8$
 $f(n) = f(n-1) + 5$

x	y
0	-8
1	-3
2	2
3	7
4	12

$m = \frac{5}{1}$
 $b = -8$

$y = 5x - 8$

6. $f(1) = \frac{2}{3}$
 $f(n) = \frac{1}{4}f(n-1)$

x	y
1	$2/3$
2	$1/6$
3	$1/24$
4	$1/96$
5	$1/384$

$r = \frac{1}{4}$

$y = \frac{2}{3}(\frac{1}{4})^{x-1}$

7. Linear function

Slope = $-\frac{5}{2}$ and y-intercept (0,7)

x	y
0	7
2	2
4	-3
6	-8
8	-13

$m = -\frac{5}{2}$

$y = -\frac{5}{2}x + 7$

8. Exponential function

Ratio = 5 and y-intercept (0,4)

x	y
0	4
1	20
2	100
3	500
4	2500

$\cdot 5$

$y = 4(5)^x$

9. Linear function

Slope = -3 and point (-2,6)

x	y
-2	6
-1	3
0	0
1	-3
2	-6

$m = \frac{-3}{1}$

$y = 6 - 3(x + 2)$
 $y = -3x$

For each situation, identify the 2 variables, label and complete the table, then write an explicit equation.

10. Savannah is saving money to buy her first car. She has \$350 and plans to earn \$100 per week at her part time job.

x	# of weeks	0	1	2	3	4
y	\$ Saved	350	450	550	650	750

$$y = 100x + 350$$

11. Giovanni is investing for retirement. He has \$30,000 and is investing in an account that promises to earn 8% interest.

x	# of years	0	1	2	3	4
y	\$ Saved	30000	32400	34992	37791	40814

$$y = 30,000(1.08)^x$$

12. Arianna is trying to reduce the amount of trash she sends to the landfill. She threw out 47 pounds of garbage this month. She plans to reduce the amount by 15% every month.

x	# of months	0	1	2	3	4
y	# of pounds	47	39.95	33.96	28.86	24.53

$$y = 47(.85)^x$$

13. The population of Leesville High is growing. This year, there were 2600 students. The population is increasing 3% every year.

x	# of years	0	1	2	3	4
y	# of students	2600	2678	2758	2841	2926

$$y = 2600(1.03)^x$$

14. Keisha worked all summer and saved most of the money she earned. When school started, she had \$1600 saved. She spends about \$25 per week.

x	# of weeks	0	1	2	3	4
y	\$	1600	1575	1550	1525	1500

$$y = -25x + 1600$$

15. Jamal is working on a science project about plant growth. The first week, the plant measured 3.5 inches. Since then, the plant has grown 0.25 inches per week.

	# of weeks	1	2	3	4	5
	inches	3.5	3.75	4	4.25	4.5

$$y = .25(x-1) + 3.5$$

$$y = 3.5 + .25(x-1)$$

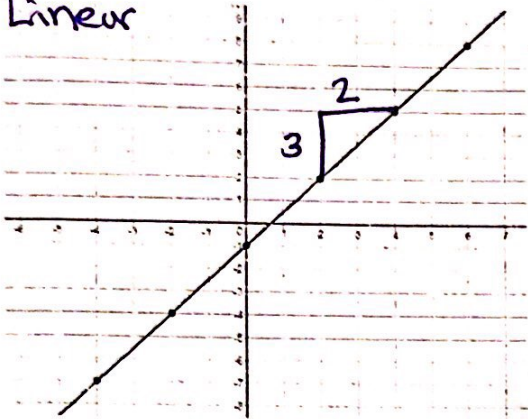
16. Samantha bought a new car for \$34,000. The value of the car depreciates 6% per year.

x	# of years	0	1	2	3	4
y	Value of car	34000	31960	30042	28239	26545

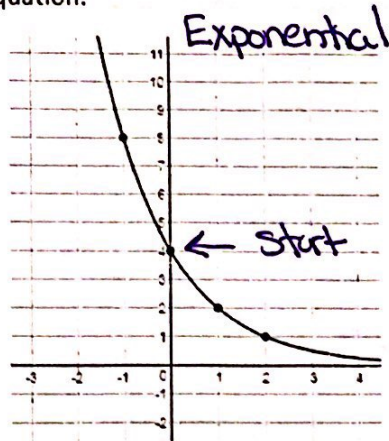
$$y = 34,000(.94)^x$$

For each graph, complete the table of values, then write an explicit equation.

17. Linear



18.



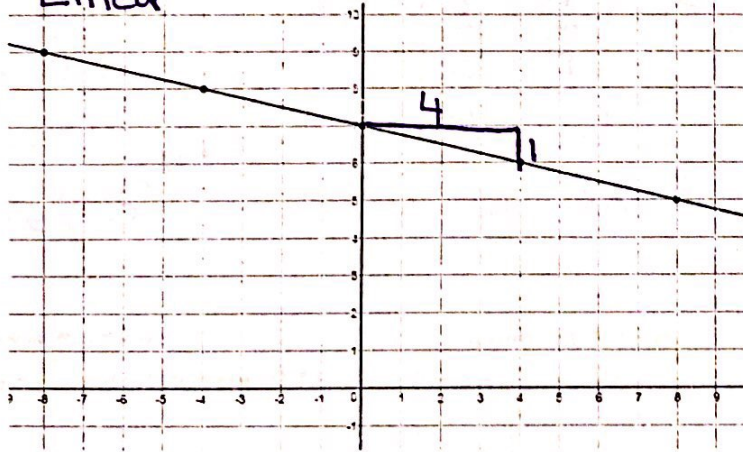
x	y
-4	-7
-2	-4
0	-1
2	2
4	5

$y = +\frac{3}{2}x - 1$

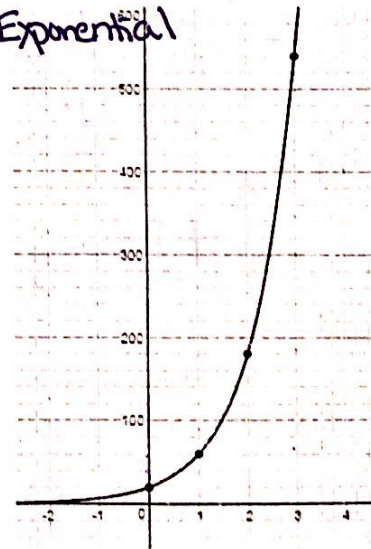
x	y
-1	8
0	4
1	2
2	1
3	1/2

$y = 4\left(\frac{1}{2}\right)^x$

19. Linear



20. Exponential



x	y
-8	9
-4	8
0	7
4	6
8	5

$m = -\frac{1}{4}$

$y = -\frac{1}{4}x + 7$

x	y
0	20
1	60
2	180
3	540
4	1620

$y = 20(3)^x$