6.4

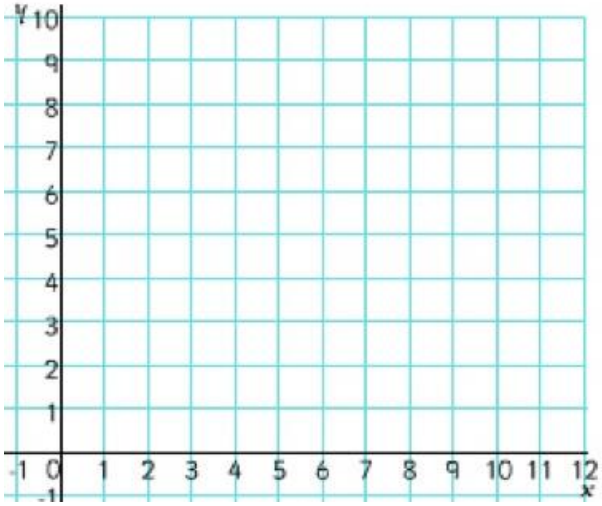
Comparing Linear & Nonlinear Functions

Do Now

Graph the data in the table. Decide whether the graph is *linear* or *nonlinear.*

1.

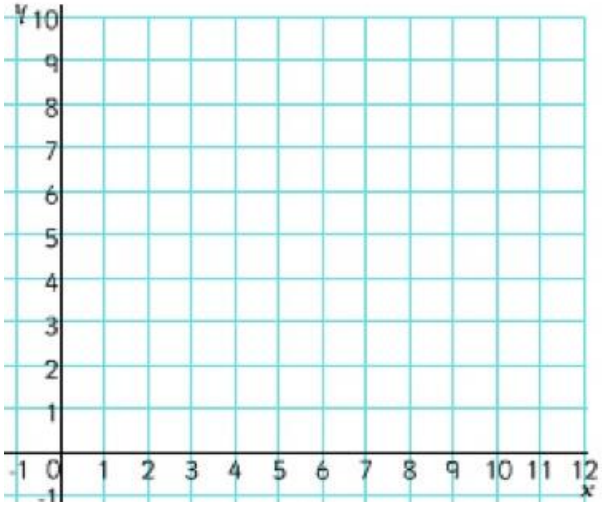
x	0	1	2	3
y	6	4	2	0



Graph the data in the table. Decide whether the graph is *linear* or *nonlinear.*

2.

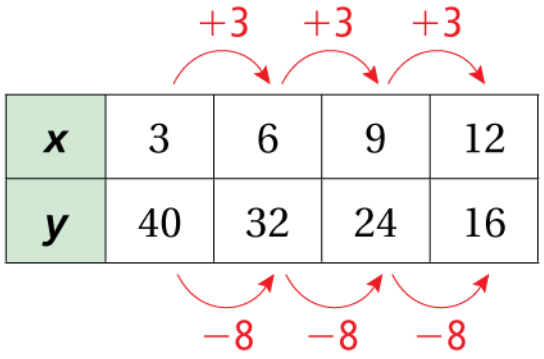
x	0	1	2	3
y	3	5	8	12



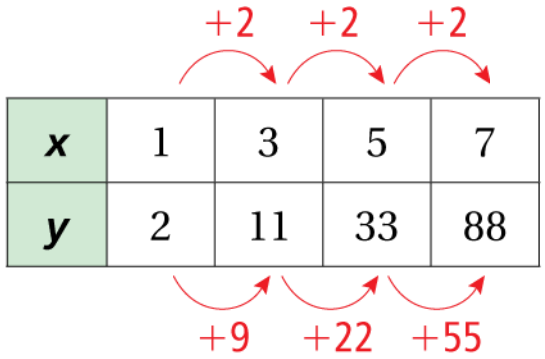
Lesson

Does the table represent a *linear* or *nonlinear* function? Explain.

a.



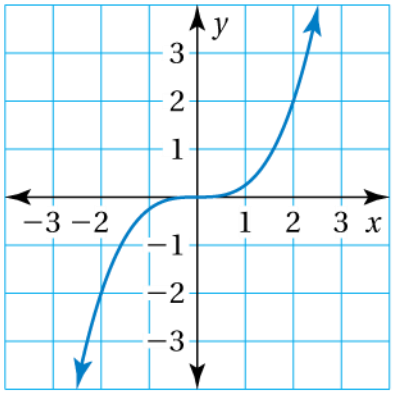
b.



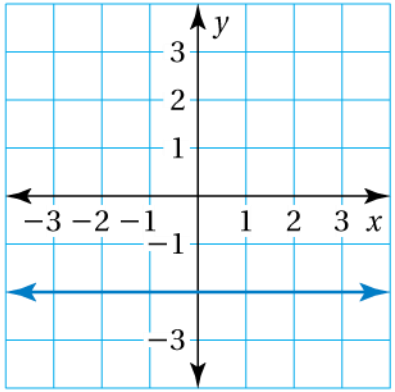
Lesson

Does the graph represent a *linear* or *nonlinear* function? Explain.

a.



b.



On Your Own

Does the table or graph represent a *linear* or *nonlinear* function? Explain.

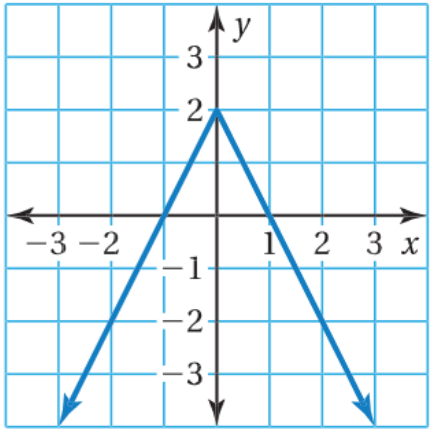
1.

x	*y*
0	25
7	20
14	15
21	10

2.

x	*y*
2	8
4	4
6	0
8	−4

3.



Lesson

Which equation represents a *nonlinear* function?

(A) $y = 4.7$

(B) $y = \pi x$

(C) $y = \frac{4}{x}$

(D) $y = 4(x - 1)$

Lesson

Account A earns simple interest. Account B earns compound interest. The table shows the balances for 5 years. Graph the data and compare the graphs.

Year, t	Account A Balance	Account B Balance
0	$100	$100
1	$110	$110
2	$120	$121
3	$130	$133.10
4	$140	$146.41
5	$150	$161.05

On Your Own

Does the equation represent a *linear* or *nonlinear* function? Explain.

4. $y = x + 5$

5. $y = \frac{4x}{3}$

6. $y = 1 - x^2$

Practice

Graph the data in the table. Decide whether the graph is *linear* or *nonlinear*.

1.

x	0	1	2	3
y	5	10	15	20

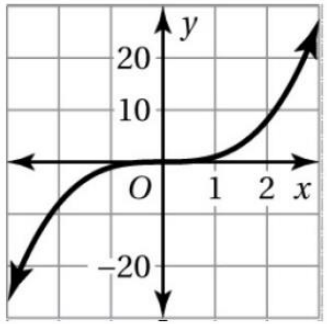
2.

x	1	2	3	4
y	4	6	9	13

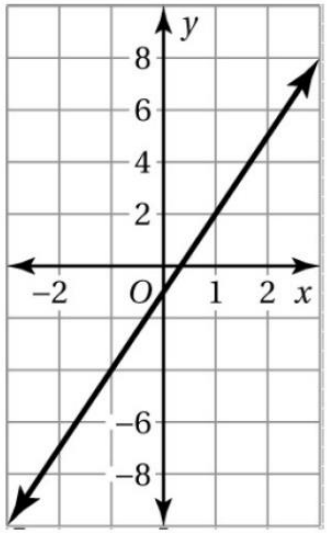
Practice

Does the table or graph represent a *linear* or *nonlinear* function? Explain.

3.



4.



Practice

5.

x	3	5	7	9
y	5	3	0	3

6.

x	4	7	10	13
y	–2	0	2	4

Practice

7. The table shows the area A (in square centimeters) of a circle with radius r centimeters. Does the table represent a *linear* or *nonlinear* function? Explain.

Radius, *r*	1	2	3	4	5	6	7	8
Area, *A*	π	4π	9π	16π	25π	36π	49π	64π

Practice

8. The table shows the cost y (in dollars) of x ounces of cereal.

Ounces, *x*	8	12	16
Cost, *y*	?	2.5	3.5

a. What is a missing y-value that makes the table represent a nonlinear function?

b. What is the missing y-value that makes the table represent a linear function?

c. Write a linear function that represents the cost y of x ounces of cereal. Interpret the slope.