NAME: _____ PERIOD: _____ DATE: _____

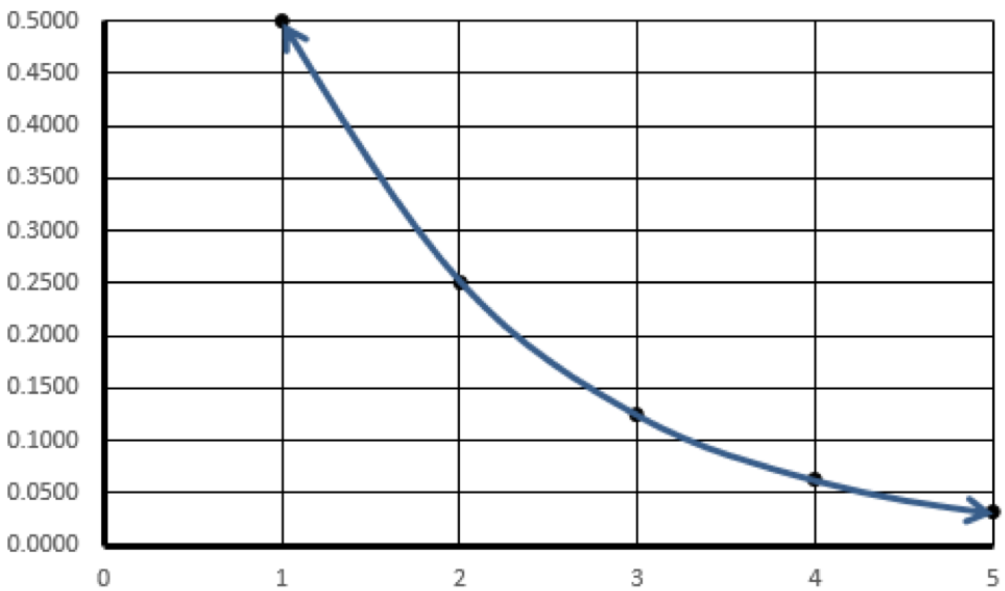
Homework Problem Set

For each table in Problems 1–6, graph the data then classify the data as describing a linear relationship, an exponential growth relationship, an exponential decay relationship, or neither. If the relationship is linear or exponential, write a formula that models the data.

1.

x	$f(x)$
1	$\frac{1}{2}$
2	$\frac{1}{4}$
3	$\frac{1}{8}$
4	$\frac{1}{16}$
5	$\frac{1}{32}$

$\times \frac{1}{2}$ $\times \frac{1}{2}$ $\times \frac{1}{2}$



Linear or Exponential or Neither? Growth or Decay?

Equation if linear or exponential: $y=\left(\frac{1}{2}\right)^x$ OR $y=\frac{1}{2}\left(\frac{1}{2}\right)^{x-1}$

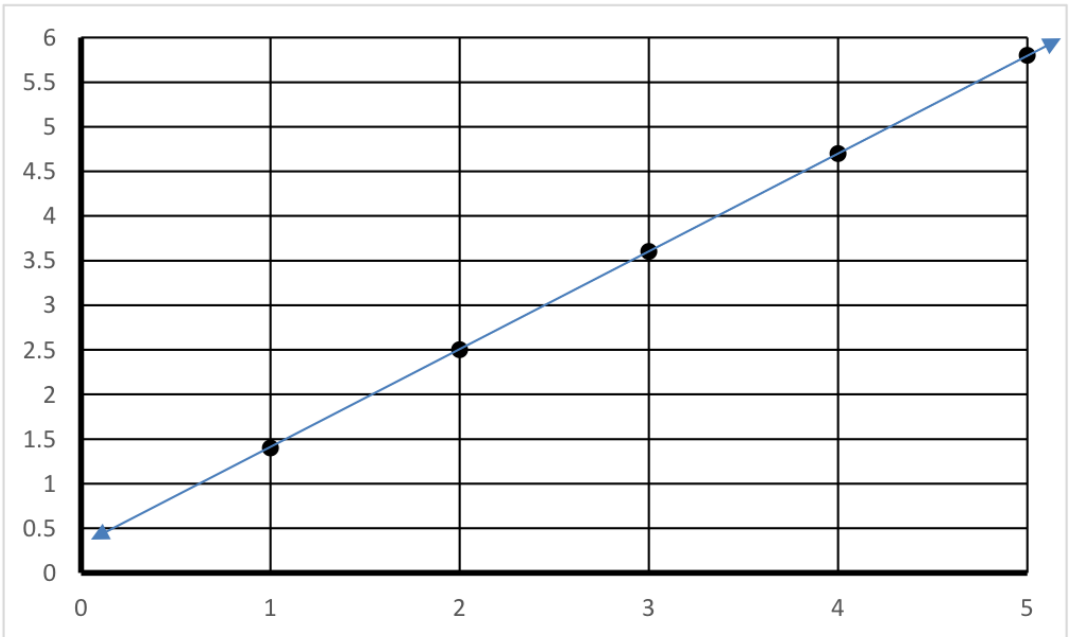
↑ Starting at term 0

↑ Starting at term 1

2.

x	*f*(*x*)
1	1.4
2	2.5
3	3.6
4	4.7
5	5.8

1.1
1.1



$d = 1.1$

$f(1) = 1.4$

$f(x) = 1.4 + 1.1(x-1)$
$= 1.4 + 1.1x - 1.1$
$f(x) = 1.1x + 0.3$

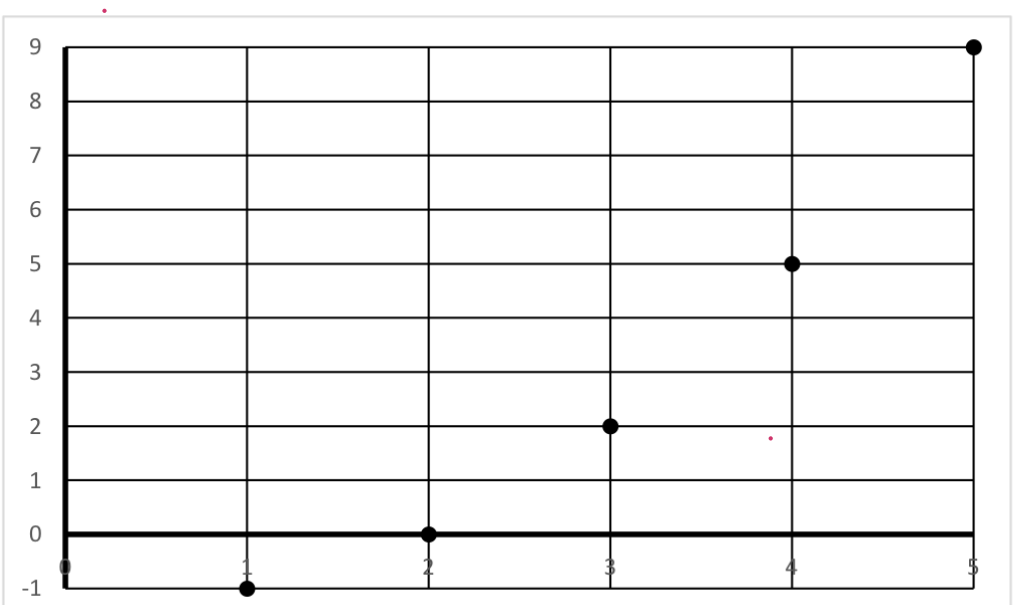
Linear or Exponential or Neither? Growth or Decay?

Equation if linear or exponential: $f(x) = 1.1x + 0.3$

3.

x	*f*(*x*)
1	−1
2	0
3	2
4	5
5	9

+1
+2
+3
+4



No common difference or common ratio.

Linear or Exponential or Neither? Growth or Decay?

Equation if linear or exponential: QUADRATIC

4.

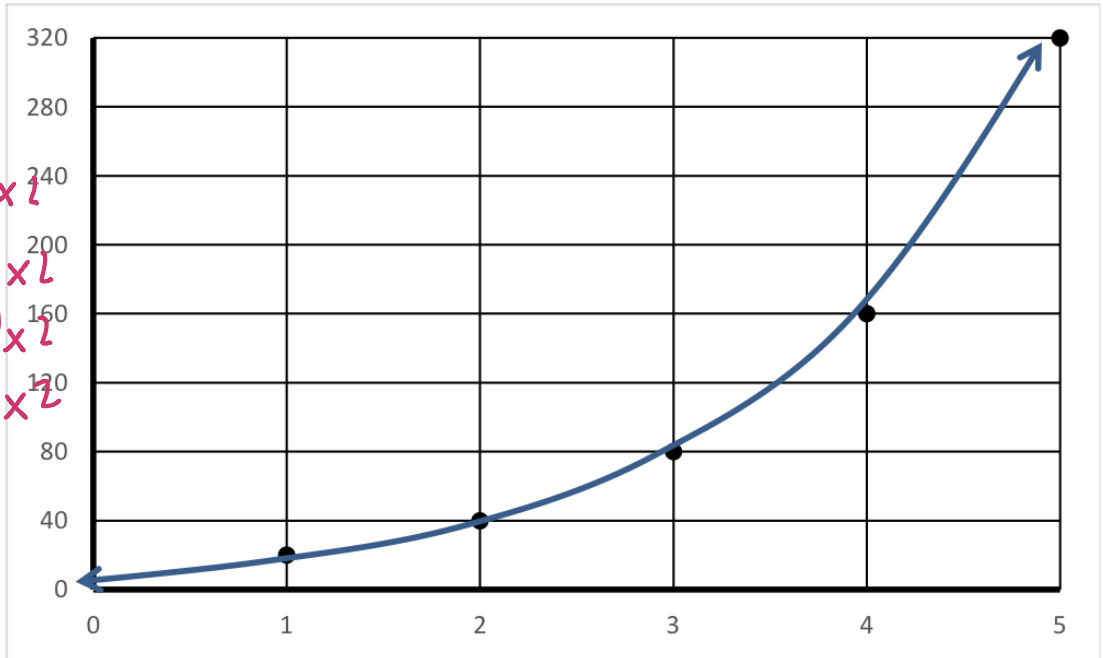
x	$f(x)$
1	20
2	40
3	80
4	160
5	320

x 2 x 2 x 2 x 2

$r = \frac{40}{20} = 2$

$f(0) = 10$

$f(x) = 10(2)^x$



Linear or Exponential or Neither? Growth or Decay?

Equation if linear or exponential: $f(x) = 10(2)^x$ OR $f(x) = 20(2)^{x-1}$

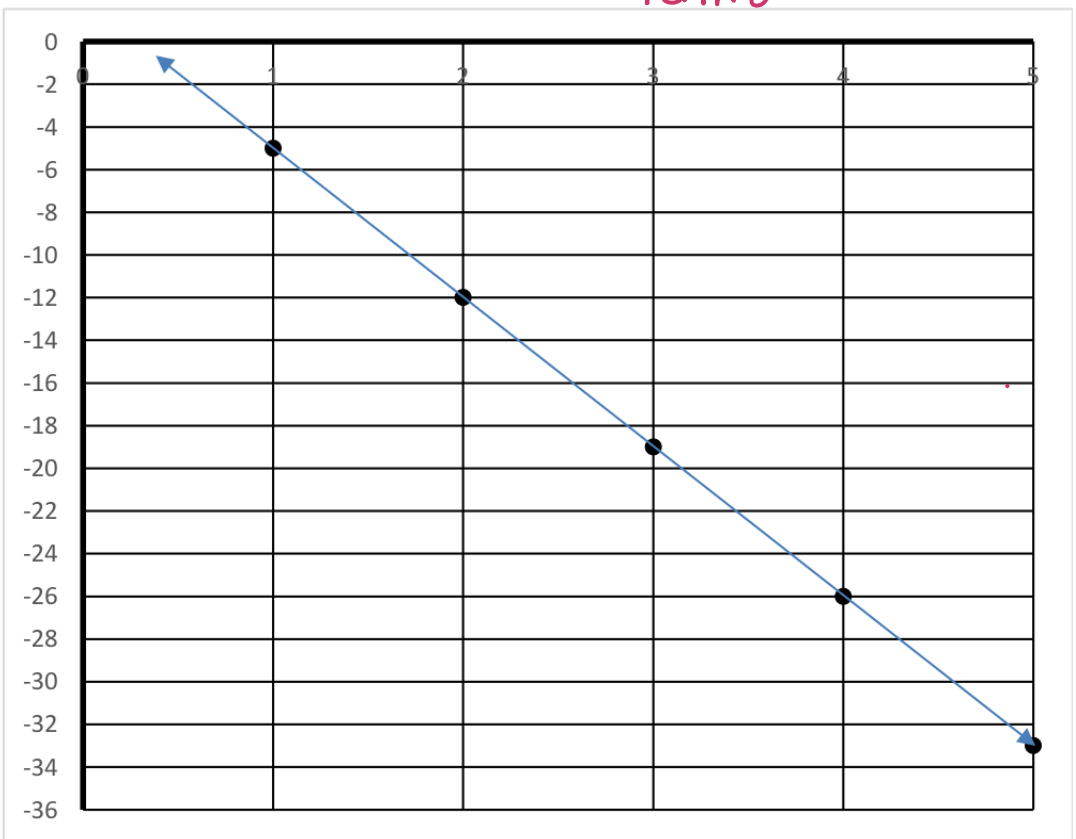
↑ Starting at term 0

↑ Starting at term 1

5.

x	$f(x)$
1	−5
2	−12
3	−19
4	−26
5	−33

-7 -7 -7 -7



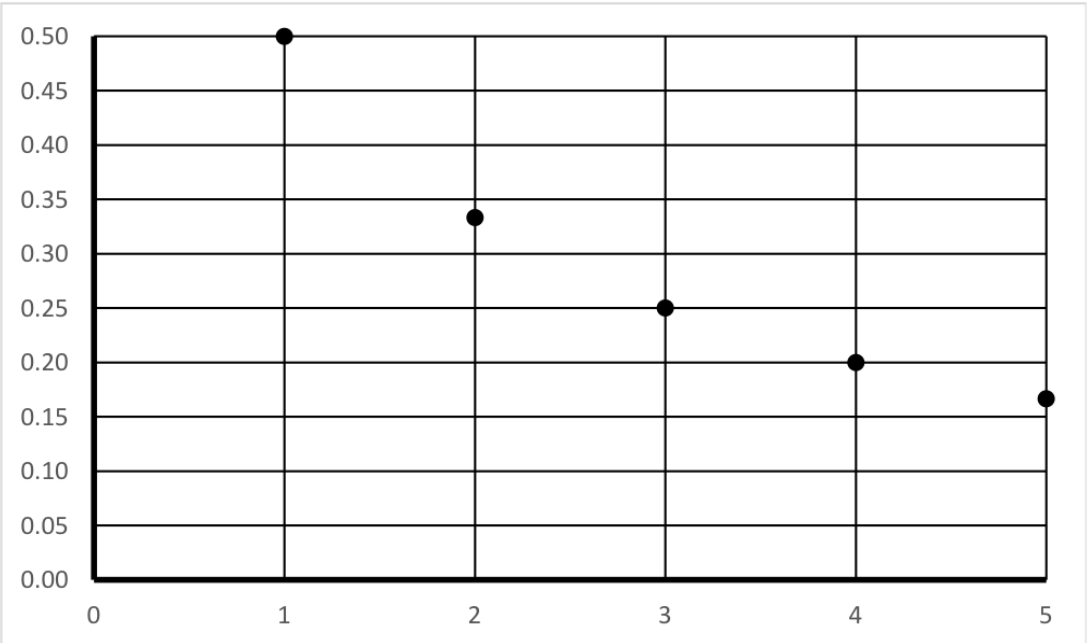
Linear or Exponential or Neither?

Growth or Decay?

Equation if linear or exponential: $f(x) = 2 - 7x$

6.

x	$f(x)$
1	$\frac{1}{2}$
2	$\frac{1}{3}$
3	$\frac{1}{4}$
4	$\frac{1}{5}$
5	$\frac{1}{6}$



No common difference or ratio

Linear or Exponential or Neither? Growth or Decay?

Equation if linear or exponential: _____

Spiral REVIEW—Function Notation and Evaluating Functions

Determine the value of each of the following given, $f(x) = -x + 4$.

7. $f(0)$

$f(n) = -x + 4$
$f(0) = 0 + 4$
$f(0) = 4$

8. $f(4)$

$f(x) = -x + 4$
$f(4) = -(4) + 4$
$f(4) = 0$

9. $f(-4)$

$f(x) = -x + 4$
$f(-4) = -(-4) + 4$
$f(-4) = 4 + 4$
$f(-4) = 8$

10. $f(2)$

$f(2) = 2$

11. $f(-2)$

$f(-2) = 6$

12. $f\left(\frac{1}{2}\right)$

$f(\frac{1}{2}) = 3.5$

Spiral REVIEW—Domain and Range

For each of the following, state the domain and range in interval notation if possible.

13. $f(x) = -2x + 1$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

14. $f(x) = 2^x$

Domain: $(-\infty, \infty)$

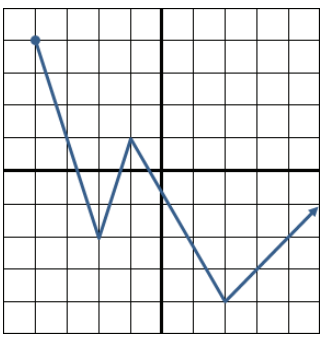
Range: $(0, \infty)$

15. $f(x) = |x|$

Domain: $(-\infty, \infty)$

Range: $[0, \infty)$

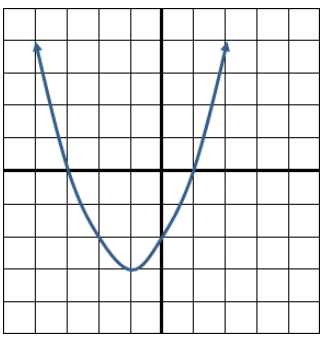
16.



Domain: $[-4, \infty)$

Range: $[-4, \infty)$

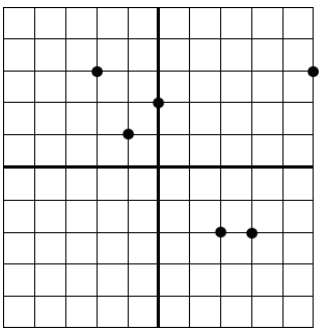
17.



Domain: $(-\infty, \infty)$

Range: $[-3, \infty)$

18.



Domain: $\{-2, -1, 0, 2, 3, 5\}$

Range: $\{-2, 1, 2, 3\}$

19. $\{(1, 3), (-4, 9), (-2, -7)\}$

Domain: $\{-4, -2, 1\}$

Range: $\{-7, 3, 9\}$

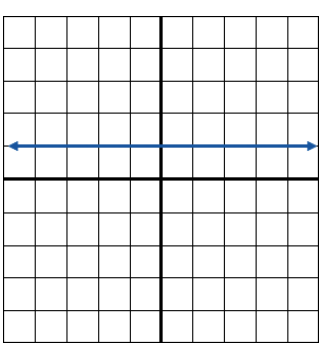
20.

x	y
3	3
2	2
−1	−1
0	0

Domain: $\{-1, 0, 2, 3\}$

Range: $\{-1, 0, 2, 3\}$

21.



Domain: $(-\infty, \infty)$

Range: $\{1\}$