

READY, SET, GO!

Name _____

Period _____

Date _____

READY

Topic: Distributive Property

Simplify the following expressions

1. $3(2x + 7)$ **Answer: $6x+21$**

2. $-12(5x - 4)$ **Answer: $-60x+48$**

3. $5a(-3a + 13)$ **Answer: $-15a^2+65a$**

4. $9x(6x - 2)$ **Answer: $54x^2 - 18x$**

5. $\frac{2x}{3}(12x + 18)$

Answer: $8x^2+12x$

6. $\frac{4a}{5}(10a - 25b)$

Answer: $8a^2 - 20ab$

7. $\frac{-4x}{11}(121x + 22)$

Answer: $-44x^2 - 8x$

SET

Topic: Recognizing Linear Exponential and Quadratic Functions

In each set of 3 functions, one will be linear and one will be exponential. One of the three will be a new category of function. List the characteristics in each table that helped you to identify the linear and the exponential functions. What are some characteristics of the new function? Find an explicit and recursive equation for each.

8. Linear, exponential, or a new kind of function?

a.

x	$f(x)$
6	64
7	128
8	256
9	512
10	1024

Type and characteristics?

Answer: Ratio of 2 between outputs, Exponential.

Explicit equation:

Answer: $f(x) = 2^x$

Recursive equation:

**Answer: $f(x) = f(x - 1) \cdot 2$
 $f(1) = 2$**

b.

x	$f(x)$
6	36
7	49
8	64
9	81
10	100

Type and characteristics?

Answer: Goes by different amounts, new kind.

Explicit equation:

Answer: $f(x) = x^2$ Answer: Different, not expected students can create yet.

Recursive equation:

**Answer: $f(x) = f(x - 1) + 2x - 1$
 $f(6) = 36$**

c.

x	$f(x)$
6	11
7	13
8	15
9	17
10	19

Type and characteristics?

Answer: Difference of 2 between outputs, Linear.

Explicit equation:

Answer: $f(x) = 2x - 1$

Recursive equation:

**Answer: $f(x) = f(x - 1) + 2$
 $f(6) = 11$**



9. Linear, exponential, or a new kind of function?

d.

x	$f(x)$
-2	-17
-1	-12
0	-7
1	-2
2	3

Type and characteristics?

Answer: Difference of 5 between outputs, Linear.

Explicit equation:

Answer: $f(x) = 5x - 7$

Recursive equation:

Answer: $f(x) = f(x - 1) + 5$

$f(1) = -2$

e.

x	$f(x)$
-2	1/25
-1	1/5
0	1
1	5
2	25

Type and characteristics?

Answer: Ratio of 5 between outputs, Exponential.

Explicit equation:

Answer: $f(x) = 5^x$

Recursive equation:

Answer: $f(x) = f(x - 1) \cdot 5$

$f(1) = 5$

f.

x	$f(x)$
-2	9
-1	6
0	5
1	6
2	9

Type and characteristics?

Answer: Different amounts being added, new kind.

Explicit equation:

Answer: $f(x) = x^2 + 5$

Answer: Different, not expected students can create yet.

Recursive equation:

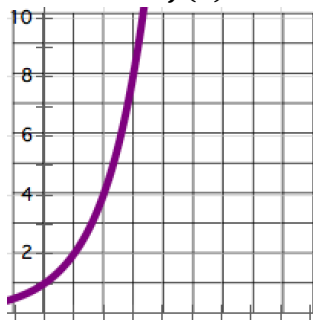
Answer: $f(x) = f(x - 1) + 2x - 1$

$f(1) = 6$

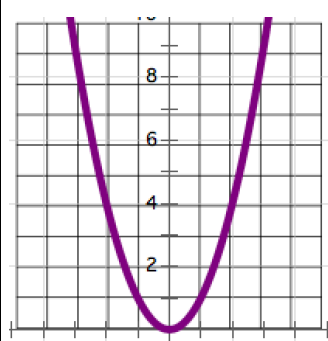
10. Graph the functions from the tables in #8 and #9. Add any additional characteristics you notice from the graph. Place your axes so that you can show all 5 points. Identify your scale. Write your explicit equation above the graph.

a. Equation:

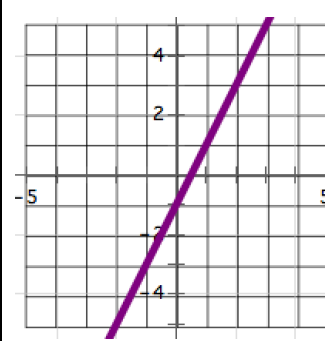
Answer: $f(x) = 2^x$



b. Equation:**Answer: $f(x) = x^2$**

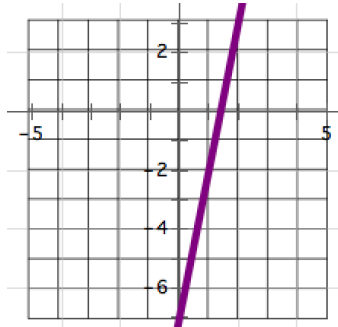


c. Equation:**Answer: $f(x) = 2x - 1$**



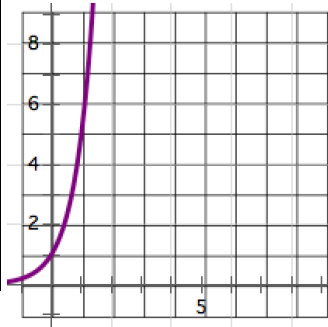
d. Equation:

Answer: $f(x) = 5x - 7$



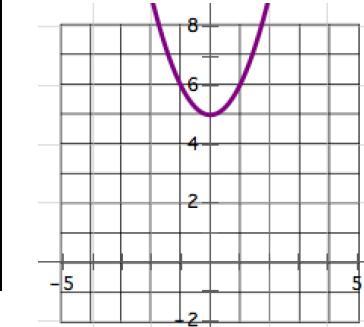
e. Equation:

Answer: $f(x) = 5^x$



f. Equation:

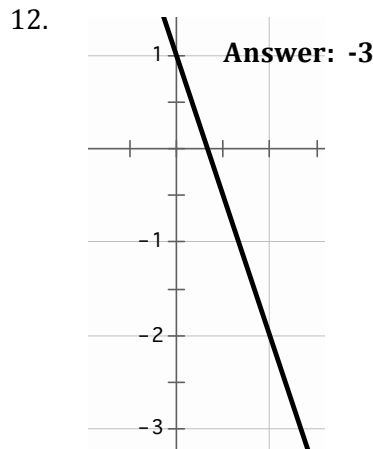
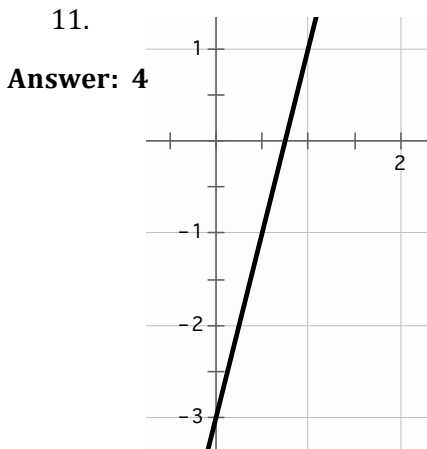
Answer: $f(x) = x^2 + 5$



GO

Topic: Rates of Change

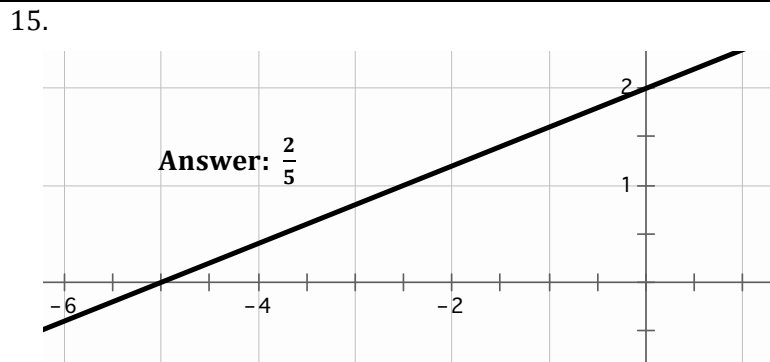
Identify the rate of change in each of the representations below.



13. **Answer: 3**

x	f(x)
25	65
26	68
27	71
28	74

14. **Answer: 5**
 $f(0) = 7; f(n + 1) = f(n) + 5$



16. Slope of \overline{AB}
 $A(-3, 12) B(-11, -16)$
Answer: $\frac{7}{2} = 3.5$

17. George is loading freight into an elevator. He notices that the weight limit for the elevator is 1000 lbs. He knows that he weighs 210 lbs. He has loaded 15 boxes into the elevator. Each box weighs 50 lbs. Identify the rate of change for this situation. **Answer: 50 lbs per box**

18.

Independent variable	4	5	6	7	8
Dependent variable	5	5.5	6	6.5	7

Answer: .5

19. $f(-4) = 24$ and $f(6) = -36$
Answer: -6