

Modeling Linear and Exponential Functions (Unit 11)

Name: _____

Date: _____

1. Write a function that corresponds to all of the values in the table.

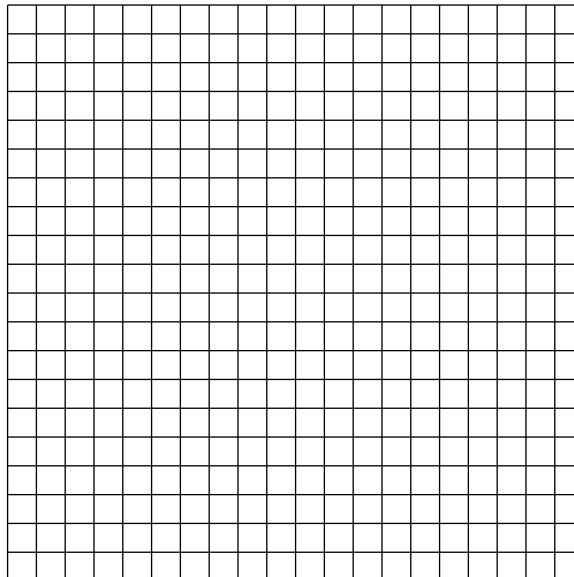
x	$f(x)$
2	3
1	4
-1	6
-4	9
-6	11

2. Write a function that corresponds to the ordered pairs shown in the table.

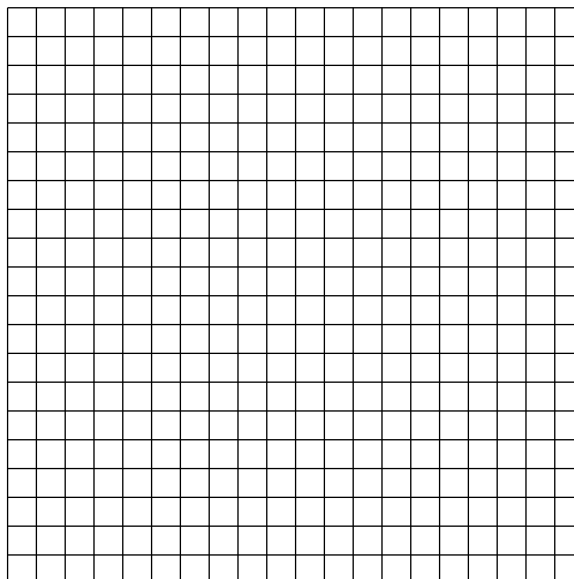
x	-5	-3	-2	1	3
$f(x)$	-13	-7	-4	5	11

3. An initial population of 78 rare animals is growing at an animal reservation at a rate of 17% a year. How many animals will there be after 3 years?
4. An initial patch of molds in a laboratory covers 5 cm^2 . The area of the patch is increasing at a rate of 12% per day. What will be the area of the patch after 8 days?
5. The population of Dallas in 1980 was 904,599. In 1990, Dallas had grown linearly to 1,007,618. Using this information, what is the expected population of Dallas in the year 2000?
6. The popularity of cable television is continuing to increase linearly. In 1990, 54,871,330 households in the U.S. had cable television. In 1995, 62,620,700 households had cable television. Using this information, how many households in the U.S. are expected to have cable television in 2005?

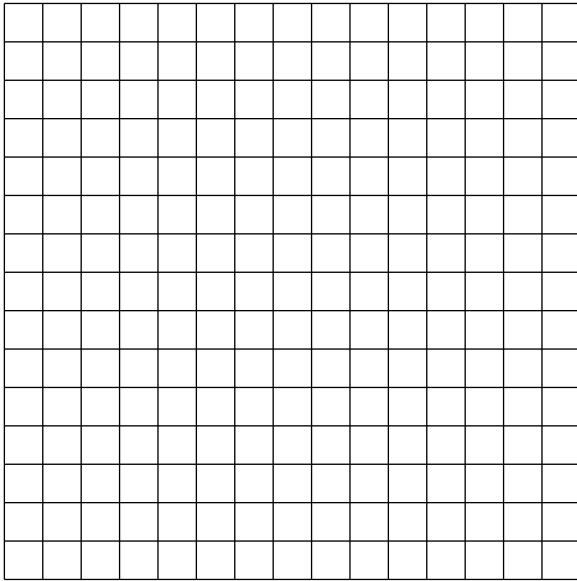
7. Graph the functions $f(x) = 3x + 7$ and $g(x) = \left(\frac{7}{4}\right)^x - 3$, where $x \geq 2$. Which point is closest to where $g(x)$ begins to exceed $f(x)$?



8. Given the functions $f(x) = 7x^2 + 5$ and $g(x) = 5^{0.5x} + 7$, in which domain is $g(x) \geq f(x)$? Use the graph below.



9. Tucker is considering two summer jobs. Company A pays \$440 per week with weekly \$10 pay increases. Company B pays \$400 per week with weekly 4% pay increases. Use the graph below to determine when the weekly salary at Company B surpasses that of Company A and by how much.



10. Willamena has been offered positions at two different companies. Both have a starting salary of \$40000 per year with salary increases based on job performance. Job A offers a yearly salary increase of \$2000. Job B offers a yearly salary increase of 4.5%. If she chooses Job B, how long until the yearly salary exceeds that of Job A? Use the table below.

Salary per Year

Year	Job A	Job B
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		