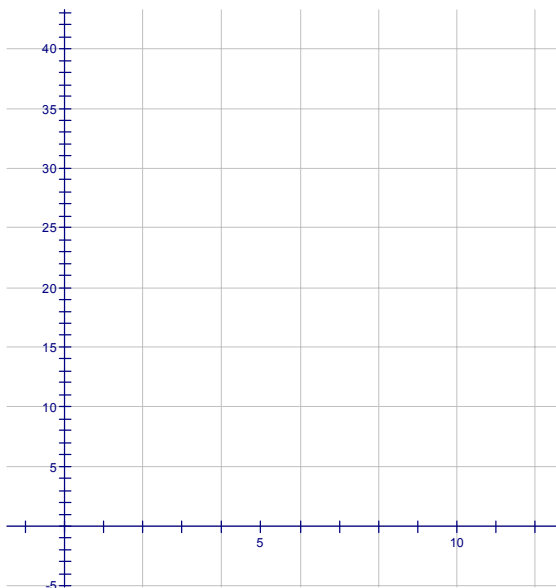


Troy and Gabriella are students at East High School, which has a population of 2374 students. They met at registration and immediately fell in love. However, their relationship was doomed to fail. By the first day of school they were both dating someone new. By day two both of those relationships had failed and each person involved had found someone new. This unfortunate breakup pattern continued each day until everyone at the school was in a relationship. The breakups were so traumatic that the students involved only paired up with those who had not yet been in a relationship.

- [illegible]



4. On what school day will there be at least 1000 relationships?
5. What is the domain for this situation at East High? The range?
6. How large is the student body at your school? If a similar situation were to occur at your school, what would the situation's domain and range be?
7. What are some factors that affect the domain and range at East High and your school?
8. Write a general function that models this scenario.
9. What is the domain of the general function? The range?

Part II

In Part I we looked at a specific situation involving relationships at a school. We used $f(x) = 2^x$ to model this situation. In Part II we will be looking at exponential growth functions in their general form, $f(x) = ab^{x-h} + k$.

The Effect of h : Graph the following functions on the same coordinate plane. You will use these graphs to help you determine the effect of h on an exponential function.

1. $y = 3^x$

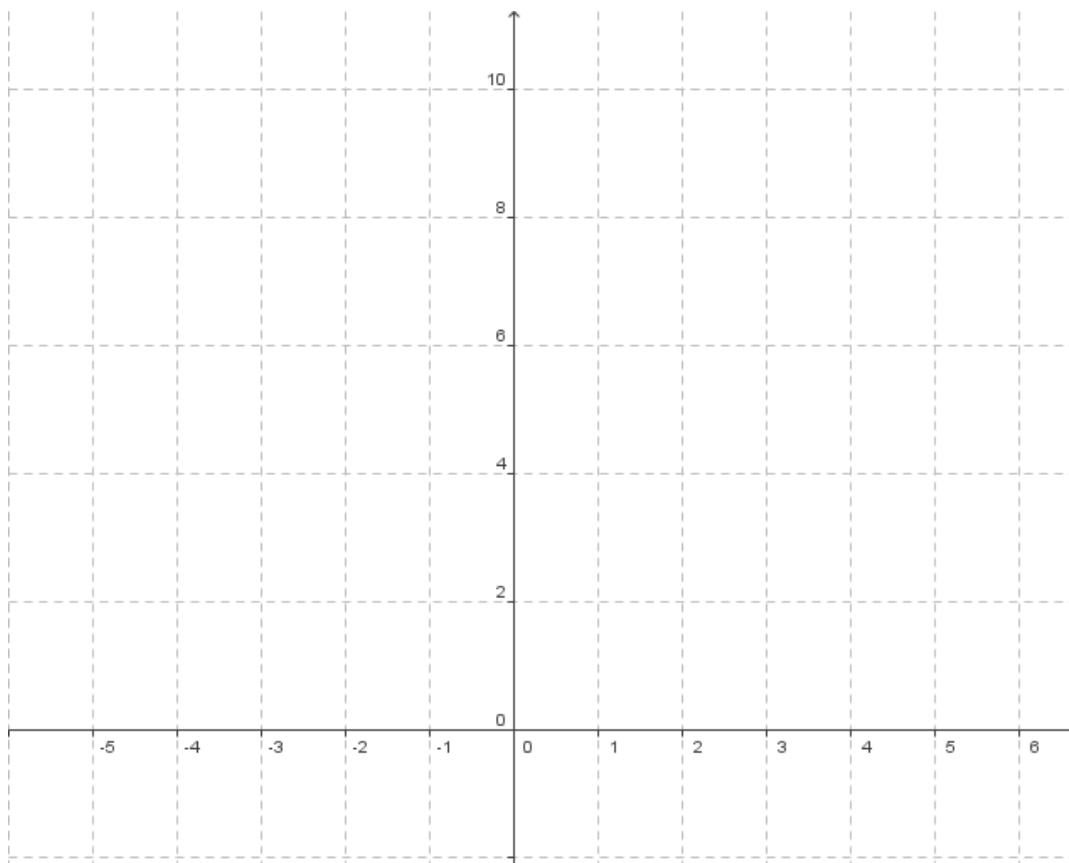
x	f(x)
-1	
0	
1	
2	

2. $y = 3^{x+2}$

x	f(x)
-3	
-2	
-1	
0	

3. $y = 3^{x-1}$

x	f(x)
0	
1	
2	
3	



4. How does h affect the graph of the equation?

The Effect of k : Graph the following functions on the same coordinate plane. You will use these graphs to help you determine the effect of k on an exponential function.

5. $y = 4^x$

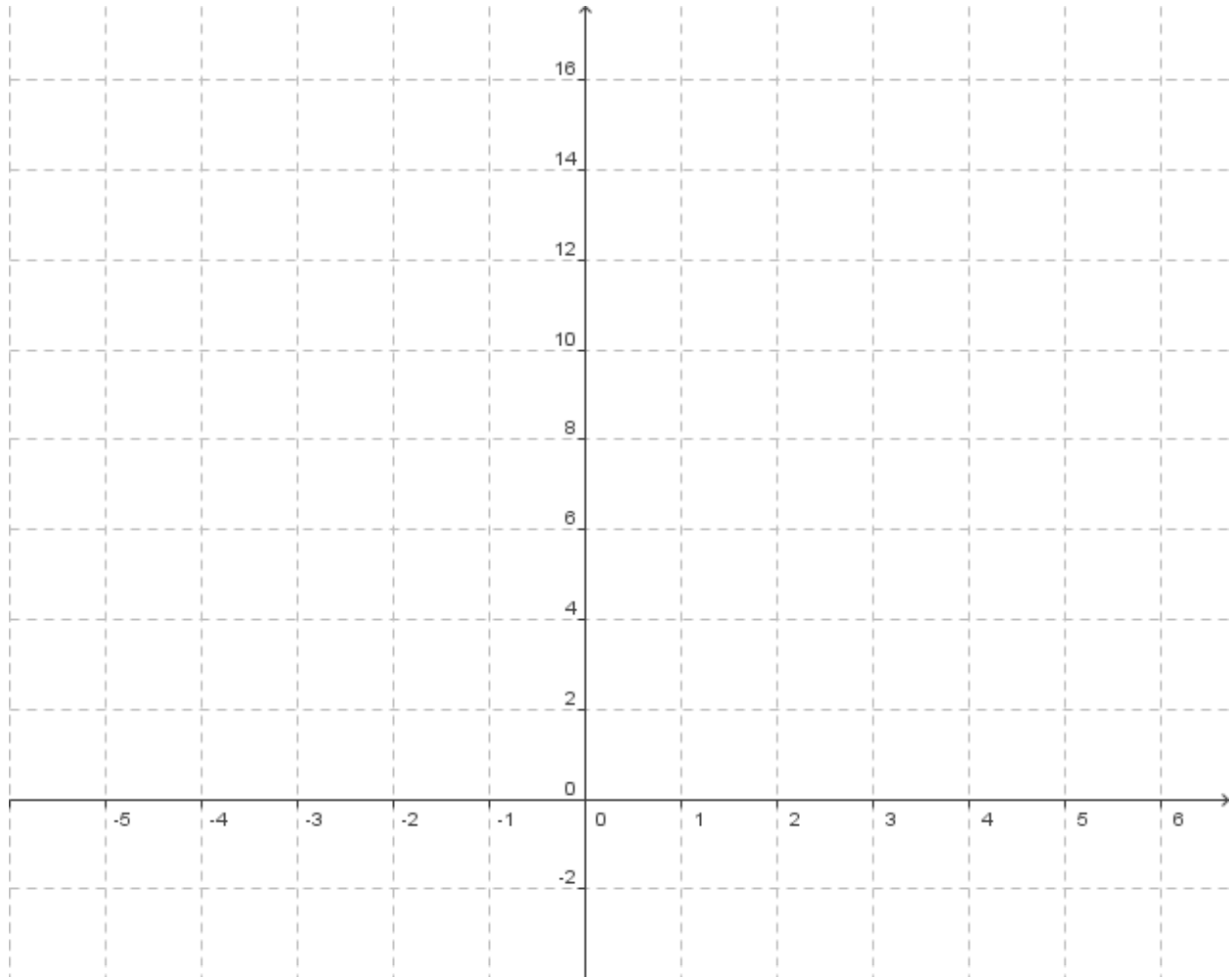
x	f(x)
-1	
0	
1	
2	

6. $y = 4^x + 2$

x	f(x)
-1	
0	
1	
2	

7. $y = 4^x - 1$

x	f(x)
-1	
0	
1	
2	



8. How does k affect the graph of the equation?

The Effect of a : Graph the following functions on the same coordinate plane. You will use these graphs to help you determine the effect of a on an exponential function.

9. $y = 2^x$

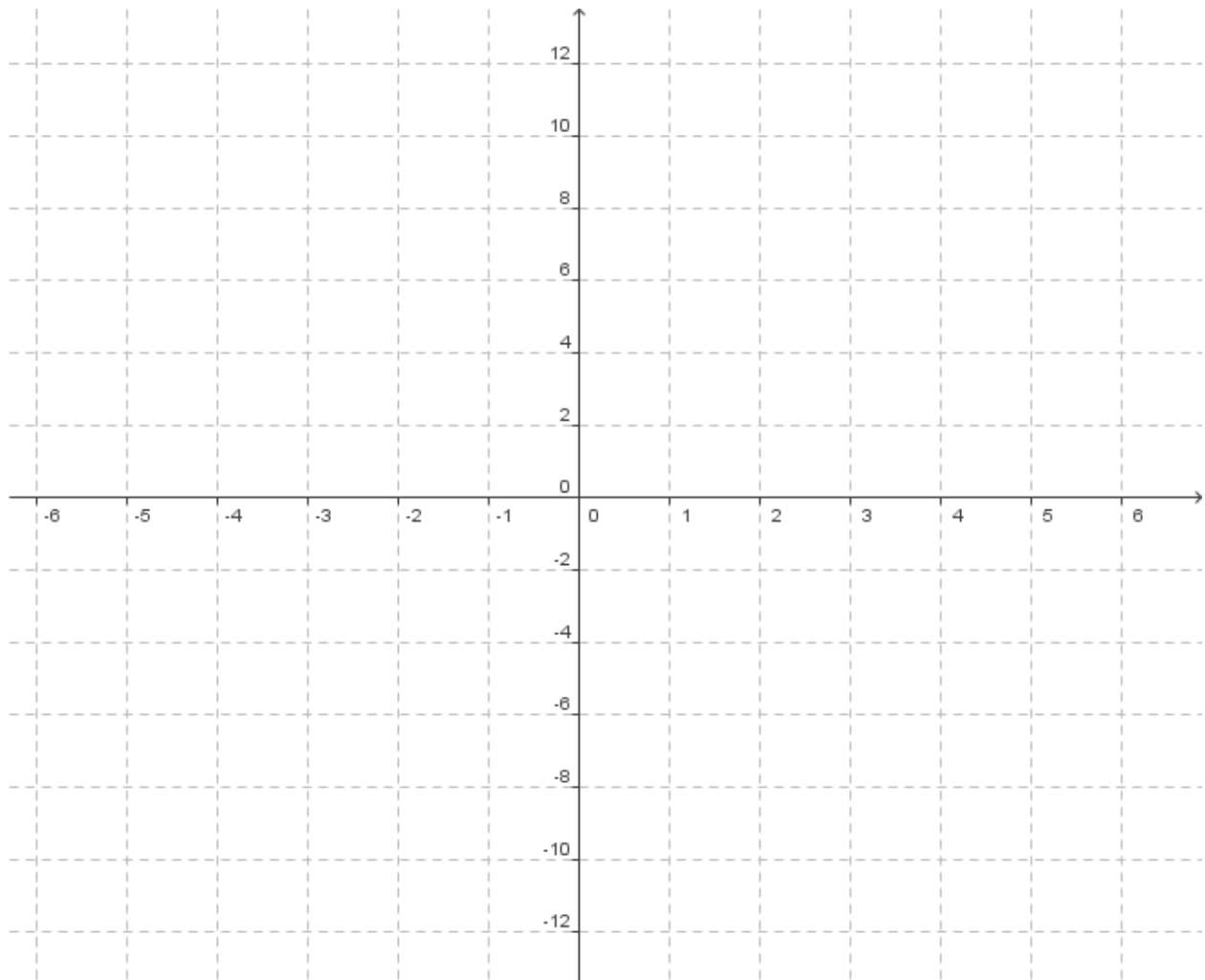
x	f(x)
-1	
0	
1	
2	

10. $y = 3 \cdot 2^x$

x	f(x)
-1	
0	
1	
2	

11. $y = -2^x$

x	f(x)
-1	
0	
1	
2	



12. How does a affect the graph of the equation?

13. Describe the transformations used to obtain the graph of g from the graph of f .

$$f(x) = 2^x \quad g(x) = -3 \cdot 2^{x+2} - 2$$

14. Graph g .

