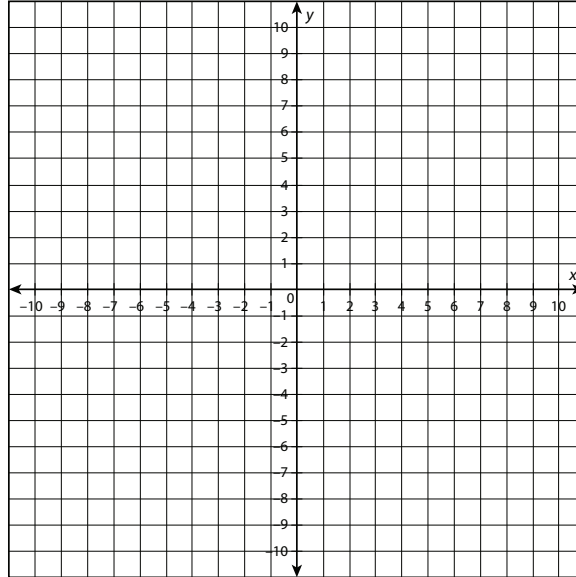


Station Activities: Comparing Exponential Models

Station 1

Work with your group to answer each question.

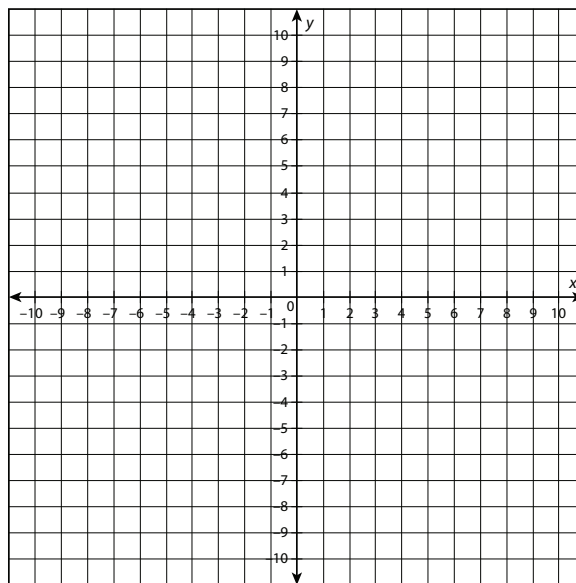
1. Graph $y = 2^x - 3$.



What is the y -intercept?

What are the zeros of this function?

2. Graph $y = 4^x - 1$.



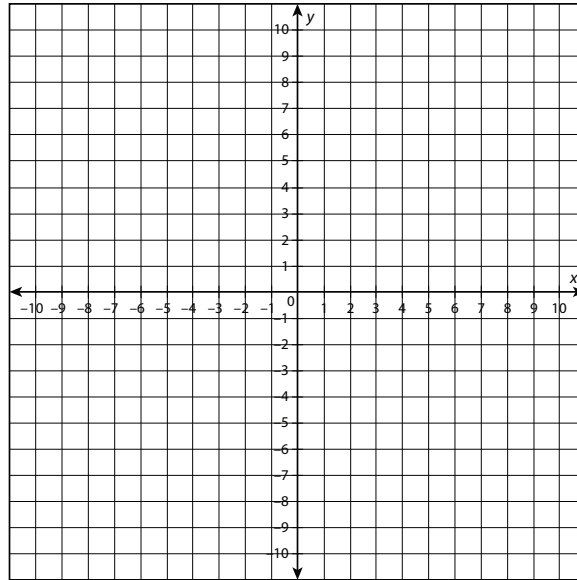
Does this function have an x -intercept? If so, what is it?

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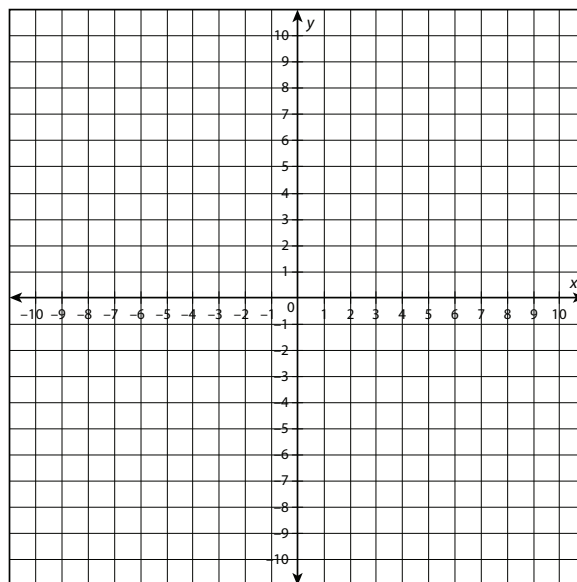
Date: _____

3. Graph $y = 3\left(\frac{1}{2}\right)^x$.



Does this function have an x -intercept? If so, estimate where it is.

4. An exponential function passes through the points $(0, 1)$ and $(2, 9)$. What is the equation of the function? Graph your answer.

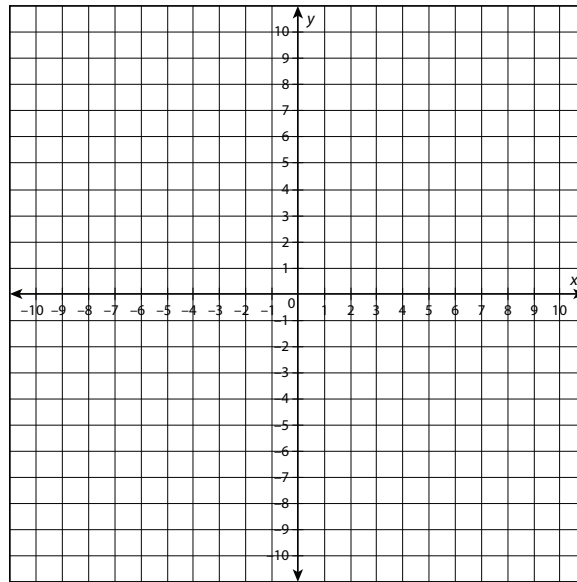


Station 2

Using a calculator, work with your group to graph each function and evaluate the function at the given value.

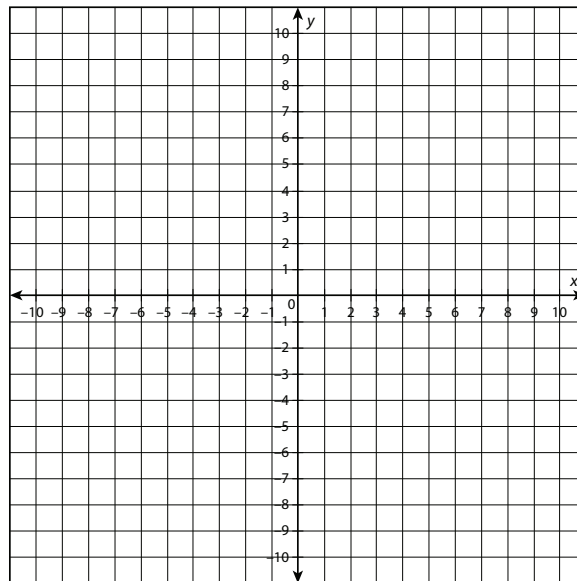
1. $f(x) = 0.75^x$

$f(4) =$



2. $f(x) = 0.4^x + 1$

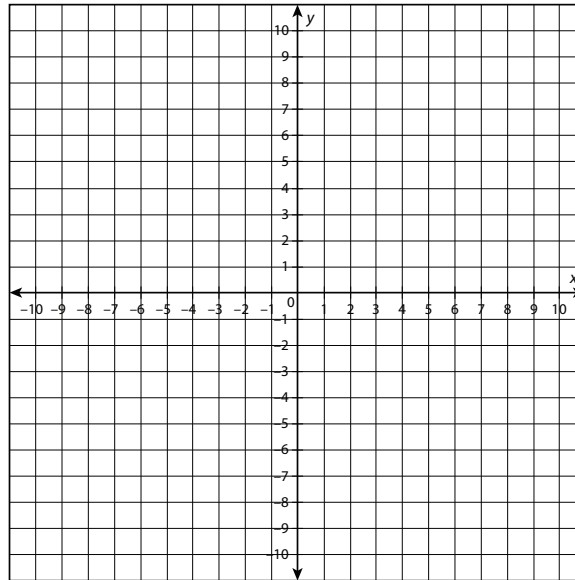
$f(5) =$

**continued**

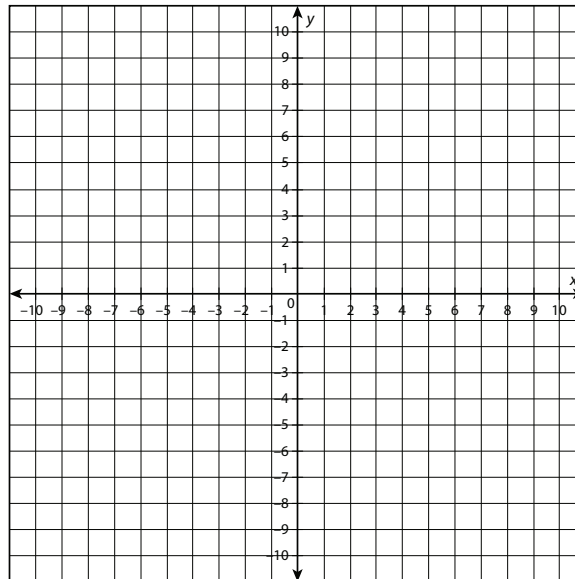
Name: _____

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3. Graph $y = \frac{1}{2} \left(\frac{1}{3} \right)^x$. If there is an x -intercept, what is it?



4. Graph $y = 4^x$. If there is an x -intercept, what is it?

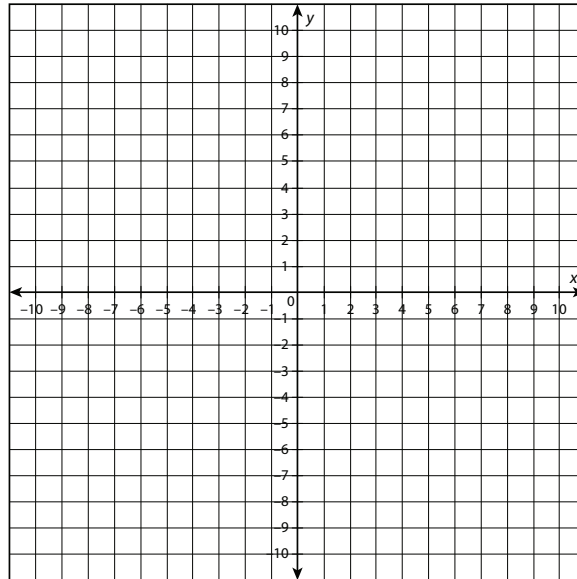


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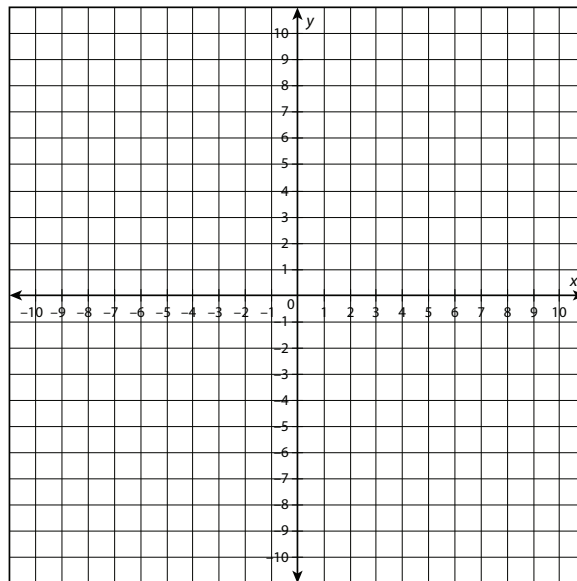
Name: _____

Date: _____

5. Graph $y = 5(2^x)$. If there is an x -intercept, what is it?



6. Graph $y = -2(2^x) + 1$. If there is an x -intercept, what is it?



7. For an exponential function to have an x -intercept, what must be true of the equation?

Station 3

The formula for compound interest is $A = P \left(1 + \frac{r}{n} \right)^{tn}$, where A is the final total (principal plus interest), P is the initial amount (principal), r is the interest rate expressed as a decimal, t is the amount of time in years, and n is the number of times the interest compounds per year. Work with your group to set up and then solve each equation. Round answers to the nearest penny.

1. An account with an initial balance of \$2,500 has interest of 3.5% that compounds quarterly over four years. What is the balance at the end of the fourth year?
2. An account with an initial balance of \$5,000 has interest of 2.7% that compounds monthly over two years. What is the balance at the end of the second year?
3. An account with an initial balance of \$500 has interest of 4% that compounds every other month over five years. What is the balance at the end of the fifth year?
4. An account with an initial balance of \$6,000 has interest of 4.5% that compounds monthly over three years. What is the balance at the end of the third year?
5. If you have \$1,000 to invest for two years, which account has the better yield: an account that compounds quarterly at 5%, or one that compounds monthly at 4.6%?

Station 4

You will work with an exponential function at this station.

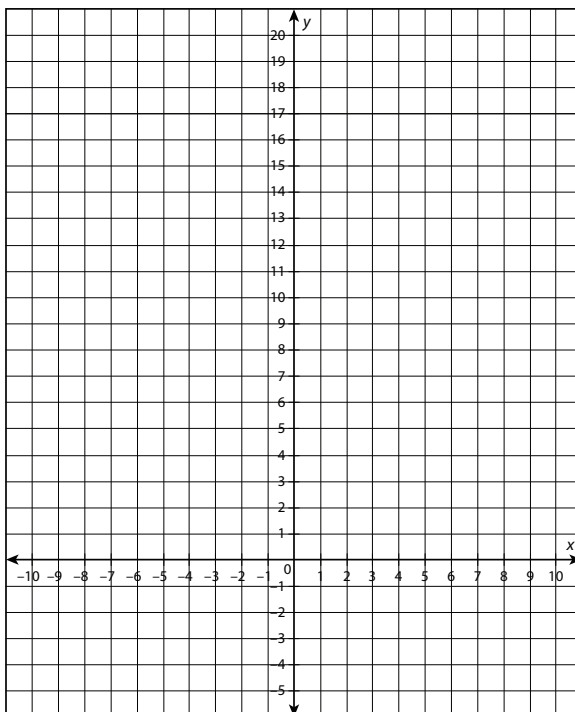
Use the given exponential function for the following problems.

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

1. Create a table of values for the function.

x	$f(x)$

2. Find the x - and y -intercepts.
3. Graph the function on the coordinate plane.

**continued**

Name: _____

Date: _____

4. Looking at the equation, what is a defining characteristic of an exponential function?

5. Looking at the table of values, what is a defining characteristic of an exponential function's table of values?

6. Looking at the graph, what is a defining characteristic of an exponential function's graph?