

Assignment

Write

Describe the differences between a constant function and an exponential function.

Remember

When a constant function is added to an exponential function, the D -value of the exponential function is affected.

A constant function can be added to an exponential function to create a new asymptote for the exponential function.

Practice

Add the functions in each pair. Identify the y -intercept and horizontal asymptote of the sum function, $h(x)$.

1. $f(x) = -3^x, g(x) = 2$

2. $f(x) = 5^{-x}, g(x) = -1$

3. $f(x) = 2^{4x}, g(x) = 10$

4. $f(x) = -4^x, g(x) = 5$

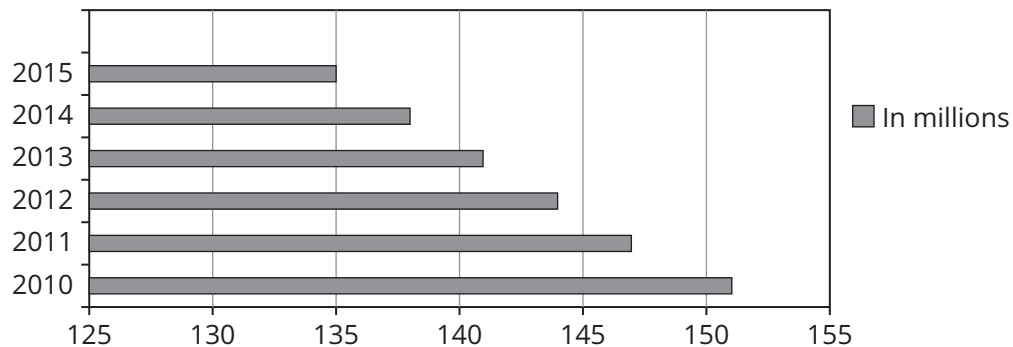
5. $f(x) = 6^{-2x}, g(x) = -8$

6. $f(x) = 2^x + 1, g(x) = 0$

Stretch

1. The number of fixed landline phone subscribers in the U.S. has been declining. The bar graph shows the decrease in the number of subscribers from 2010 to 2015.

Fixed Landline Subscribers in the U.S.



- To estimate the number of subscribers per year, create a scatter plot of the ordered pairs, with x representing the number of years since 2010 and y representing the number of subscribers in millions.
- Determine both an exponential and a linear regression function to model the situation.
- Which model would you use from part (b)? Explain your reasoning.

Review

1. Given $f(x) = 2^x$, graph $g(x) = -f(x - 1) + 2$.
2. Given $a(x) = \frac{1}{2}^x$, graph $b(x) = a(-x) - 1$.
3. An experiment begins with 400 bacteria. The bacteria population doubles each day. Write an equation in function notation to represent the number of bacteria as a function of the day number, x . Explain how you determined the equation.
4. Write the absolute value function for the graph shown.
5. Write the piecewise function for the graph shown.

