

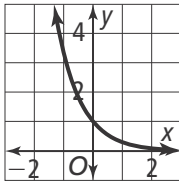


6-1 Additional Practice

Key Features of Exponential Functions

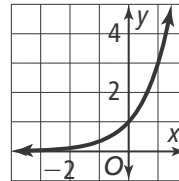
Graph each function. What are the key features of each graph (include domain, range, intercepts, asymptotes, and end behavior)?

1. $y = (0.3)^x$



Domain: all real numbers
Range: $y > 0$
Asymptotes: x-axis
End behavior:
As $x \rightarrow \infty$, $y \rightarrow 0$.
As $x \rightarrow -\infty$, $y \rightarrow \infty$

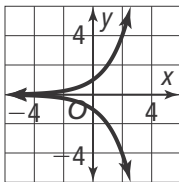
2. $y = 3^x$



Domain: all real numbers
Range: $y > 0$
Intercepts: (0, 1)
End behavior:
As $x \rightarrow \infty$, $y \rightarrow \infty$.
As $x \rightarrow -\infty$, $y \rightarrow 0$

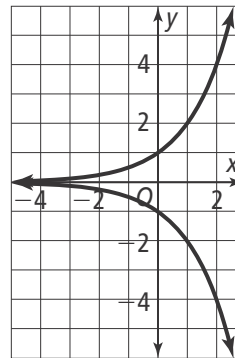
Graph each function. Describe the graph in terms of transformations of the parent function $f(x) = 2^x$. How do the asymptote and intercept of the given function compare to the asymptote and intercept of the parent function?

3. $g(x) = (0.5)^x$



When the sign of x changes, the function is reflected across the y-axis. The y-intercept does not change. The asymptote is still the x-axis.

4. $g(x) = -2^x$



When the sign of a changes, the function is reflected across the x-axis. The intercept changes from a to $-a$, which is 1 to -1 . The asymptote does not change. It is still the x-axis.

Without graphing, determine whether the function represents exponential growth or exponential decay. What is the y-intercept?

5. $y = 0.99\left(\frac{1}{3}\right)^x$ **decay; 0.99**

6. $y = 20(1.75)^x$ **growth; 20**

Write an exponential function to model each situation. Find each amount after the specified time.

7. A population of 1,236,000 grows 1.3% per year for 10 years.

$y = 1,236,000(1.013)^x$; 1,406,413

8. A population of 752,000 decreases 1.4% per year for 18 years.

$y = 752,000(0.986)^x$; 583,448