

Sketching Graphs of Exponential Functions

Summary

An exponential function has the form $y = ab^x$ where $b > 0$.

The domain is all real numbers while the range is $y > 0$.

The y-intercept is $(0, 1)$.

The end-behavior horizontal asymptote is $y = 0$.

Problems

Do these problems without a calculator.

- $y = 4e^{3x} - 8$
 - Sketch a graph.
 - Find the domain and range.
 - Find the equations of any asymptote(s).
 - Find the coordinates of all x- and y-intercepts.
- $y = 2 - 3^{-x}$
 - Sketch a graph.
 - Find the domain and range.
 - Find the equations of any asymptote(s).
 - Find the coordinates of all x- and y-intercepts.
- Find all solutions to the equation $e^x = xe^{x+2}$
- Find the x-intercepts of $y = 2x^2e^x - x^3e^{x-1}$. Does the graph have a high point between these intercepts? Explain.
- Without using your calculator decide how many times the graph of $y = x^3$ intersects the graph of $y = e^{-x}$.
- How many times does the graph of $y = e^{-x}$ intersect the graph of $y = 1 - e^{-x}$. Explain.