

D. Exponential and Logarithmic Functions

- Evaluate
 - $\log_{32} 64$
 - $\log_{\frac{1}{3}} 27$
 - $\log_{\sqrt{5}} 25$
- Solve for x to 2 decimal places
 - $\log_3 x = 4$
 - $\log_{10} x = \log_{10} 3 + 3 \log_{10} x$
 - $3 \cdot 2^x = 45$
 - $2 \log_3 x - \log_3(x - 2) = 2$
- Graph $y = 3(2)^x$, $y = 3\left(\frac{1}{2}\right)^x$, $y = 3 \log_2 x$. Discuss similarities and differences between the three functions.
- Graph each function. State domain, range, and asymptote for each function.
 - $y = 35(2)^x$
 - $y = 3 \log_2 x$
- How long does it take an investment to double in value if it is invested at 12%/a compounded semi-annually?
- The equation $D = 10 \log \frac{I}{I_0}$ models the decibel levels of sounds. The decibel levels of subway trains and normal conversation are 150dB and 90dB respectively. How many times intense as normal conversation is the noise of a subway train?
- In 1964, an earthquake in Alaska measured 8.5 on the Richter scale. In 1966, an earthquake in Turkey measured 6.9 on the Richter scale. How many more times intense was the earthquake in Alaska?

Answers

- a. $\frac{6}{5}$ b. -3 c. 4
- a. $x = 81$ b. $x = 0.33$
- Graphs are reflected images in y-axis, log function is an inverse, End behaviour, domains, ranges are different
- a. $x \in \mathfrak{R}$, $y > 0$, asymp $y = 0$ a. $x > 0$, $y \in \mathfrak{R}$, asymp $x = 0$
- 5.95 years
- 1000000 x as intense
- 40 x as intense