

4.2 Logarithmic Functions

- Write the exponential equation as a logarithmic equation.
 - $2^x = 3$
 - $10^{2x} = 7$
- Write the logarithmic equation as an exponential equation. Do not solve for x .
 - $4 = \log 1000$
 - $\log_2 x = 5$
 - $\ln 3x = 7$
 - $\log 9x = -3$
 - $-3 = \log_2 \left(\frac{1}{8}\right)$
- Sketch the graph. Label the intercepts and the asymptotes.
 - $y = \ln x$
 - $y = \ln(x - 2)$
 - $y = \ln(x + 3)$
 - $y = \ln(-x)$
 - $y = \ln(x + 3)$
- Use a calculator to find a decimal approximation. Round your answer to the third decimal place.
 - $\ln 2$
 - $\log 2$
 - $\ln(1/2)$
 - $\log(1/2)$
 - $\ln e$

- (f) $\log 10$
- (g) $\ln 1$
- (h) $\log 1$
- (i) $\log(10^4)$
- (j) $\log(10^{-3})$
- (k) $\log(1,000,000)$

5. The balance amount A of an investment of principal P compounded continuously at an annual rate r is given by the formula $A(t) = Pe^{rt}$. If \$1000 is invested at a rate of 6% compounded continuously, then how long will it take for the investment to grow to \$1700?
6. The balance amount A of an investment of principal P compounded continuously at an annual rate r is given by the formula $A(t) = Pe^{rt}$. If $r = 10\%$, then how long will it take for an investment of 1,000 to double to 2,000?