

Worksheet ---- Solving Exponential / Log Equations

1. Solve (round to nearest .0001 when appropriate):

(a) $\log_x 81 = 2$

(b) $\log_{27} 9 = x$

(c) $6^{2-3x} = 216$

(d) $6^x = 9^{2x+1}$

(e) $\log x = 2$

(f) $\ln(2x + 1) = 3$

(g) $3^{x+2} = 5^{x-1}$

(h) $\log_3(5x - 1) = 2$

(i) $e^t = 14^{2t+1}$

(j) $\log x + \log(11-x) = 1$

(k) $\log_3(x+3) + \log_3(x+5) = 1$

(l) $\log_4(5x-1) - \log_4(x+2) = 2$

(m) $\log(x+5) + \log x = \log(x+12)$

(n) $\log_6 3x - \log_6(x+2) = \log_6 2$

2. The population of Minnesota was 4.1 million in 1980, and the exponential growth rate was 1.4% per year.
 - a) Write an exponential function describing the population of Minnesota.
 - b) Predict the population in 2015.
 - c) In what year will the population reach 7.5 million?
 - d) What is the doubling time (rounded to the nearest tenth of a year)?
3. An investment with interest compounded continuously doubled itself in 15 years. What is the interest rate (rounded to the nearest tenth of a percent)?
4. Determine the age of an ivory tusk (to the nearest year) if 34% of its carbon-14 has decayed away. [Assume carbon-14 has a half-life of 5750 years.]
5. Determine the age of a bone (to the nearest year) if 85% of its carbon-14 still remains.