

Unit 1: Modeling

Vocabulary and notation

f^{-1}	inverse function	proportional increase	percentage increase
units	unitless	proportional	inversely proportional
e^x	b^x	$\ln x$	$\log_b x$
time constant	half life	doubling time	inverse time units
argument	value	input	output

Note: you do not need to know the “hyperbolic trig functions” \sinh , \cosh and \tanh and their inverses, despite the fact we use them in the worksheets.

Skills

- Computing an inverse function
- Know how input/output units of functions and their inverses are related
- Understanding possible domains and ranges for inverse functions
- Domains and ranges for standard inverses: \arcsin , \arccos , \arctan , \ln , $\sqrt{\quad}$
- Units and their behavior under:
 - addition or subtraction
 - multiplication or division
 - exponentiation and logs
 - inverses
- Identities for exponents (see preface)
- Identities for logarithms (see preface)
- Approximate values for some common numbers (Logarithm cheatsheet)
- Estimating using logs
- For quantities related by exponential and logarithmic relationships, know how changes in one are reflected in the other
- Compute a half life or doubling time for a formula that decreases or increases exponentially
- Modeling: writing a formula capturing (inverse) proportionality
- Modeling: how to state interpretations for variables in a formula