Functions of functions and the exponential function

math612.0 A1: From numbers through algebra to calculus and linear algebra

Gunnar Stefansson (editor) with contributions from very many students

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Exponential growth and decline

Exponential growth is typically expressed as:
$y(t) = Ae^{kt}$

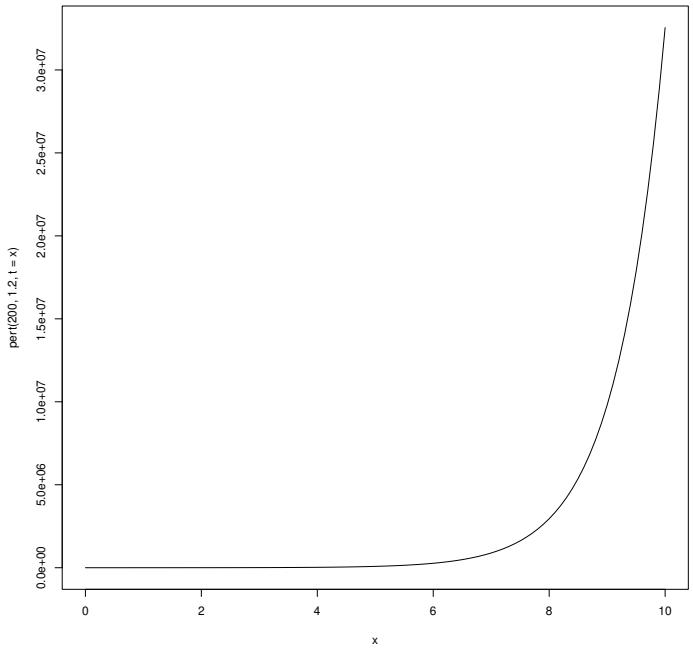

Figure: Exponential growth curve

The exponential function

An exponential function is a function with the form: $f(x) = b^x$

Properties of the exponential function

Recall that the methods of the basic arithmetic implies that:

$$e^{a+b} = e^a e^b$$

for any real numbers a and b.
The exponential function $f(x) = e^x$ is commonly written $exp(x)$ and often has a parameter a, so that e.g. $f(x) = e^{ax}$ is also called an exponential function. Note that

$$e^{bx} = (e^b)^x$$

and we can always use $e^b x$ instead of a^x for any a>0. (TO BE COMPLETED WITH A GRAPH)

Functions of functions

Storing and using R code

As R code gets more complex (more lines) it is usually stored in files. Functions are typically stored in separate files.

Storing and calling functions in R

To save a function in a separate file use a command of the form "function.r".