Functions

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

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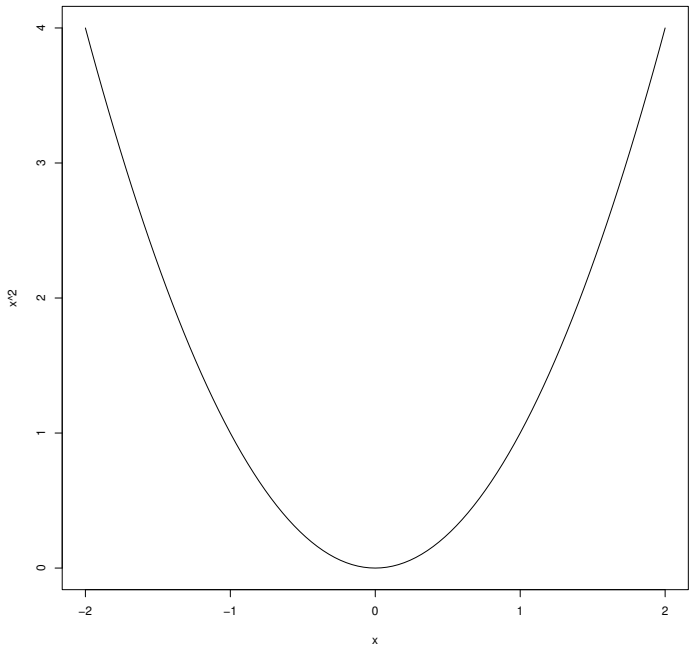
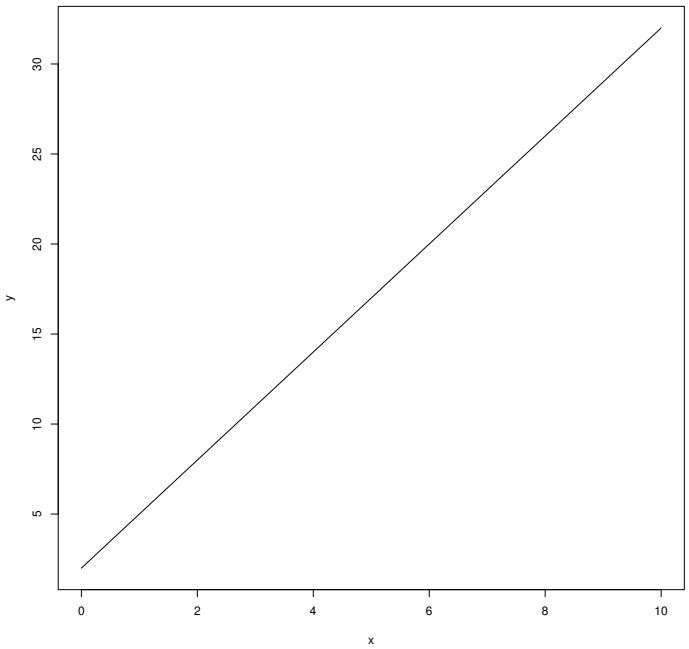
Functions of a single variable

A function describes the relationship between variables.
Examples:
$f(x) = x^2$
$y = 2 + 3 \cdot x^4$



Functions in R

A function can be defined in R using the "function" command



Ranges and plots in R

Functions in R can commonly accept a range of values and will return a corresponding vector with the outcome.
Ranges can be defined using either the colomn (:) or the sequence function
Example

```
x <- 1:5
x <- -1:5
x <- (-1):5
x <- -(1:5)
```

Plotting functions

In statistics, the function of interest is commonly called the response function. If we write Y=f(x), the outcome Y is usually called the response variable and x is the explanatory variable. Function values are plotted on vertical axis while x values are plotted on horizontal axis. This plots Y against x.

Functions of several variables