functions

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  - Othertimes, it means $log_e(n) = ln(n)$

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- $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n \qquad \forall a, b \neq 0$

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- $\frac{log_x n}{log_x m} = log_m n$

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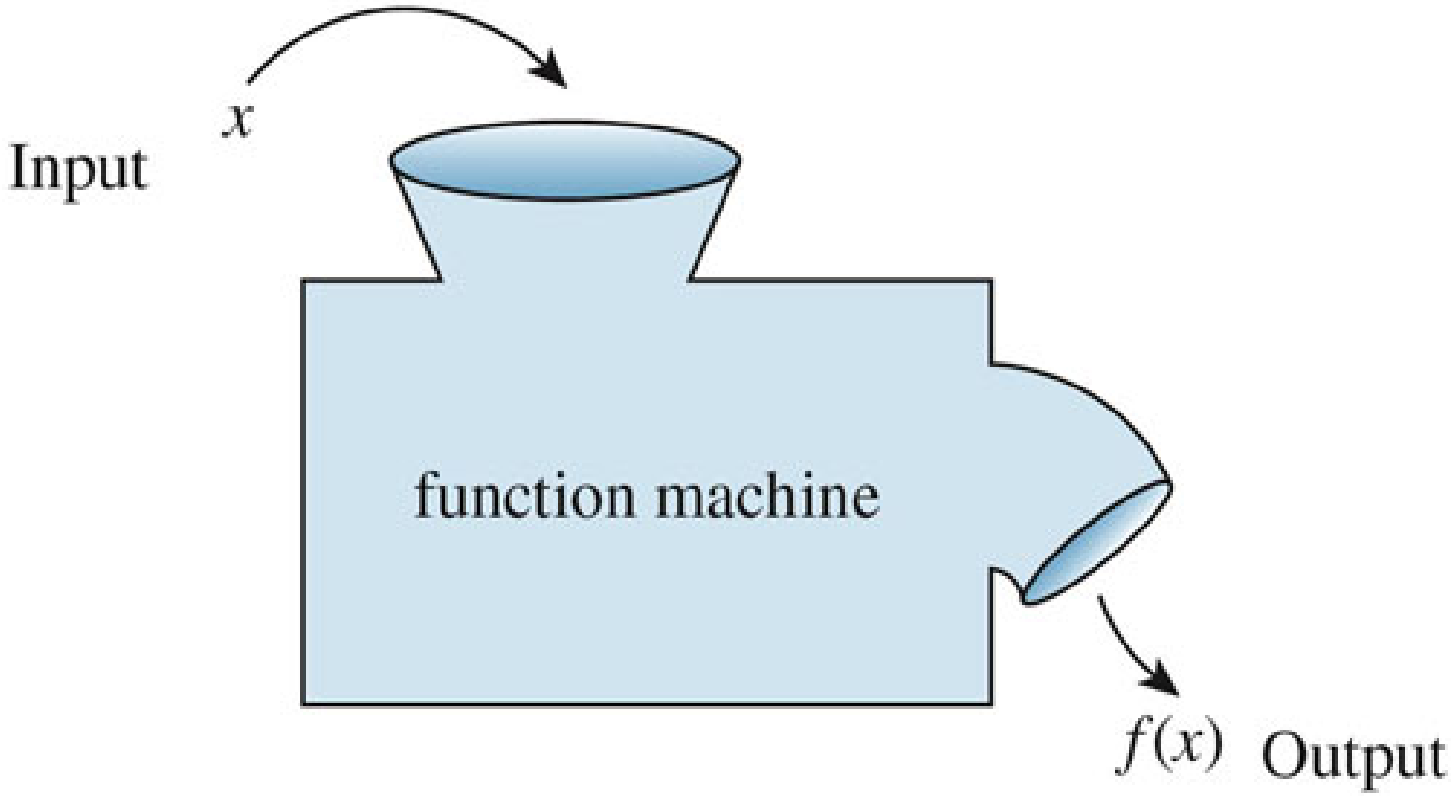
  - y is the *output* from the function



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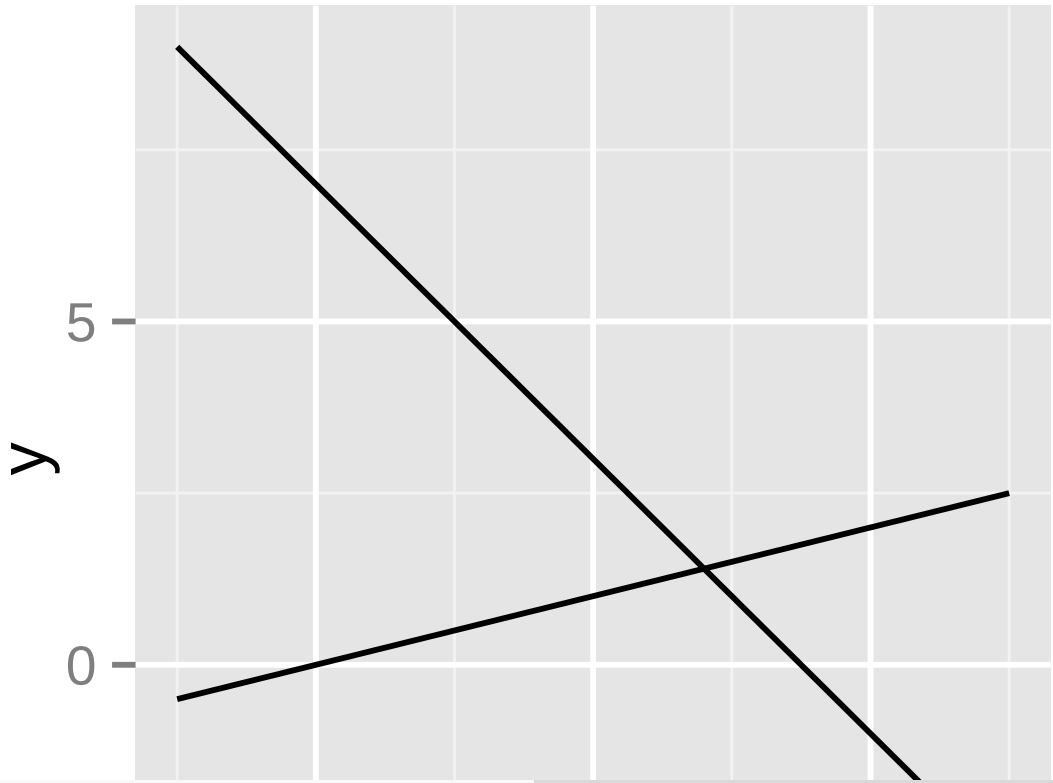
  - m is the slope (for every one unit increase in x, y increases m units)
  - b is the x-intercept: the value of y when $x = 0$

Linear functions

```
ggplot(data.frame(x=c(-3, 3)), aes(x)) +
  stat_function(fun=function(x)-2*x+3, geom="line")  +
  stat_function(fun=function(x)(1/2)*x+1)
```



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```
ggplot(data.frame(x=c(-3,4)), aes(x)) +
  stat_function(fun=function(x)2*x^2, color="red") +
  stat_function(fun=function(x)x^2, color="green") +
  stat_function(fun=function(x)-2*x^2 + 6*x -4) +
  ylim(c(-5, 5))
```