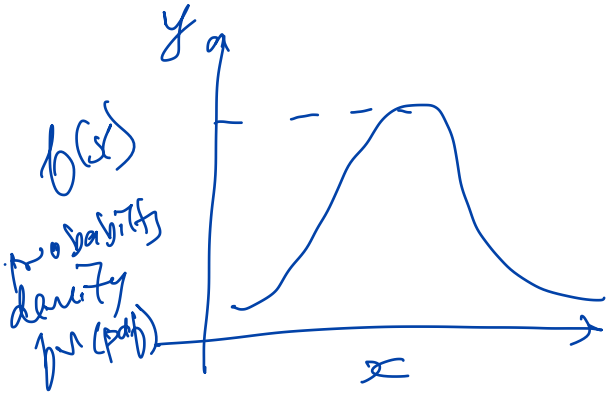
Probability distributions

random variable (x)

Continuous x or discrete x ?

Mean & variance of x ?

formula for f(x) : pdf



rnorm → returns a bunch of x

dnorm → returns f(x) corresponds to x

pnorm → area under f(x) curve upto given x

qnorm → x corresponds to an given area.

$E(X) = \text{weighted avg of } x = \sum x^1 f(x)$ — (1)

$E(X^2) = \text{weighted avg of } x^2 = \sum x^2 f(x)$ — (2)

$\text{Var}(X) = E(X^2) - (EX)^2$

$= (2) - (1)^2 = \sum x^2 f(x) - \left(\sum x f(x)\right)^2$

$SD(X) = \sqrt{\text{Var}(X)}$

Imp Distributions

uniform
normal
binomial
chi-sq
f

poisson related distributions

poisson
exponential
weibull

Binomial

eg: Flip a coin 20 times.
X = no. of heads

Roll a die 20 times. X = # Six

Roll a die repeatedly.
X = # rolls till I get a Six
not a binomial

Pick 4 people. X is # blood type B
X is Binomial with $n=4$ and $p=0.1$ (prob. of blood type = B)
↳ fixed (should be)