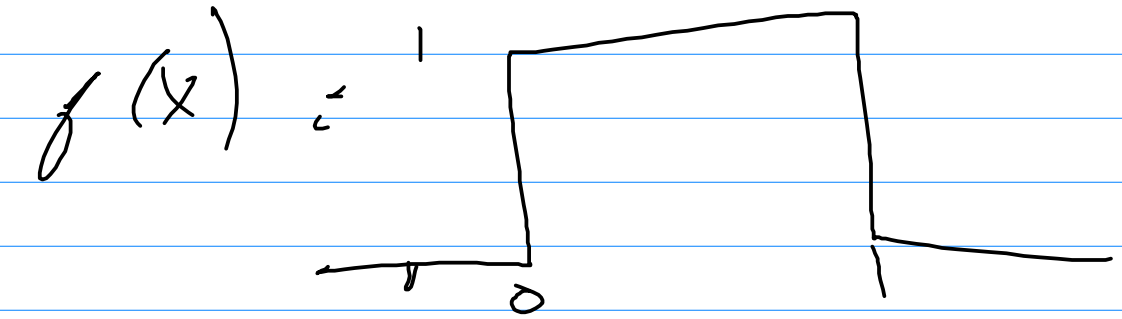
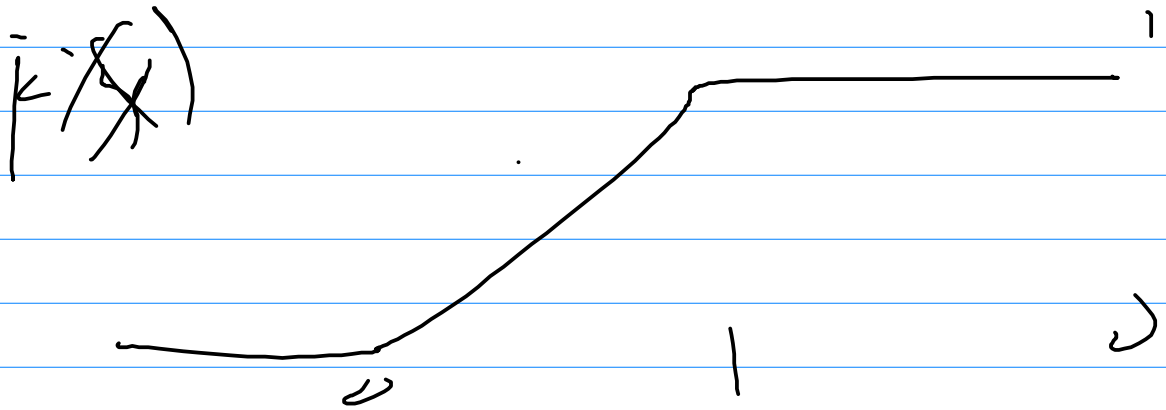
X is a uniform r.v. in [0,1].



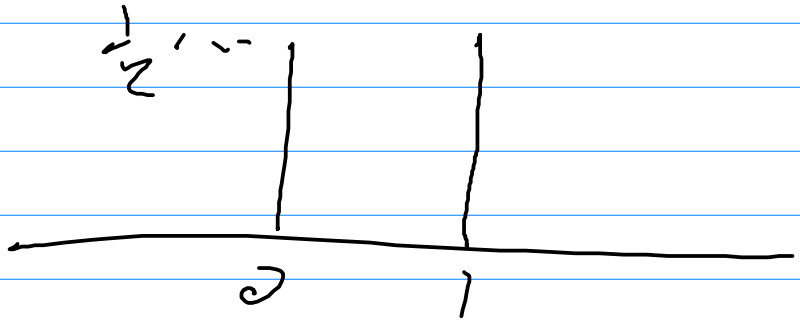


F(1/2) = 1/2 F(5) =1 F(-5) = 0

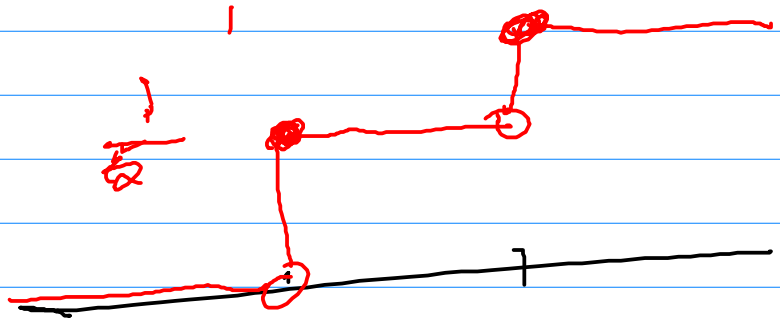
toss coin. H:1 T:0

e.g. event H is the random variable has value 1
fair coin.

density fn



cumulative fn



See Fig 4.1 on page 142 of book.

Binomial for tossing 3 fair coins. p=.5 n=3

pdf= 1/8 3/8 3/8 1/8

What's the conditional pdf given that you got at least one head?

p(at least one head) = 7/8

pdf given that is 3/8 3/8 1/8 divided by p(at least 1)

f(k|atleast 1) = f(k)/ (7/8) if k>=1 else 0

f(1|at least 1) = 3/7
f(2 ...) = 3/7
f(3....) = 1/7

they add to 1.

important definition is 4.23 on page 153.

F(x) = 0 if x<0
1/8 if 0<=x<1
4/8 if 1<=x<2
7/8 if 2<=x<3
1 if 3<=x

conditional on x>=1

F(x) = 0 if x<1
(1/8)/(7/8) = 1/7 if 1<=x<2 really 3/7
4/7 2 3 and whatever
1 3

real world: ok so you see a correlation, is it a causal effect?
e.g. just because everyone with lung cancer smoked, doesn't mean that smoking causes lung cancer (per the tobacco companies)
how to prove causality? force a random set of dogs to smoke.