

1 Part 1 : Overview

2 Part 2 : Random Numbers

2.1 pdf, cdf and inv

Consider a random variable with pdf $f(x) = x/2$ with $0 \leq x \leq 2$. Compute the probability $P[X > 1]$.

- (a) $1/2$
- (b) $3/4$
- (c) $1/4$
- (d) $3/4$

2.2 Uniform Random Numbers

How does one generate a random variable U with uniform distribution in the interval $[a,b]$ using `rand`, which generates uniform random numbers in the interval $[0,1]$?

2.3 Gaussian (Normal) Random Numbers

How does one generate a matrix of M rows and N columns of Gaussian random numbers whose mean is `mu` and whose standard deviation is `sigma` using `randn`, which generates standard Gaussian random numbers?

- (a) `X = mu + sigma * randn(N,M)` (*Wrong Dimensions*)
- (b) `X = mu + sigma * randn(M,N)`
- (c) `X = sigma + mu * randn(N,M)` (*Clearly Wrong*)
- (d) `X = sigma + mu * randn(M,N)` (*Clearly Wrong*)

2.4 `normpdf`, `normcdf`, `norminv`