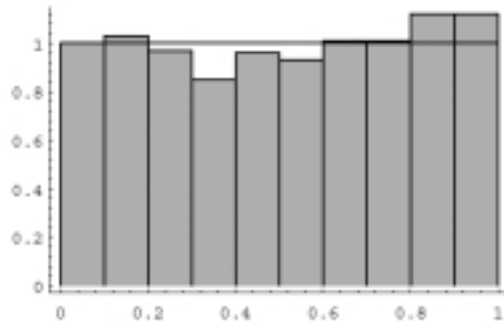
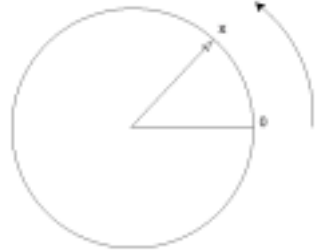


Variabile uniforme



$$P(0 \leq X \leq 1) \quad P\left(0 \leq X < \frac{1}{2}\right) = P\left(\frac{1}{2} \leq X < 1\right) = \frac{1}{2}$$

$$P(c \leq X < d) = d - c$$

$$P(E) = \int_E f(x) dx \quad P(a \leq X \leq b) = \int_a^b f(x) dx$$

Funzione densità di probabilità

$$f(x) = \begin{cases} 1, & \text{if } 0 \leq x < 1, \\ 0, & \text{otherwise.} \end{cases}$$

$$P\left(0 \leq X < \frac{1}{2}\right) = P\left(\frac{1}{2} \leq X < 1\right) = \frac{1}{2}$$

$$P(E) = \int_0^{1/2} 1 dx = \frac{1}{2}$$

$$P(E) = \int_a^b 1 dx = b - a$$

Funzione di distribuzione di probabilità

$$F_X(x) = P(X \leq x) \quad F(x) = \int_{-\infty}^x f(t) dt$$

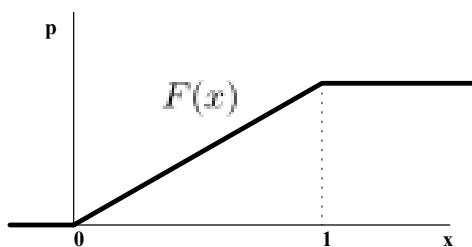
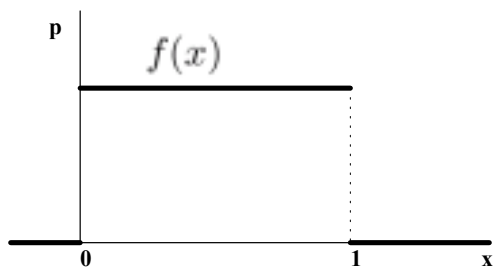
Funzioni densità e distribuzione di probabilità

$$F_X(x) = P(X \leq x) \quad F(x) = \int_{-\infty}^x f(t) dt$$

$$\frac{d}{dx} F(x) = f(x)$$

$$F(x)=x \quad f(x)=1 \quad 0 \leq x \leq 1$$

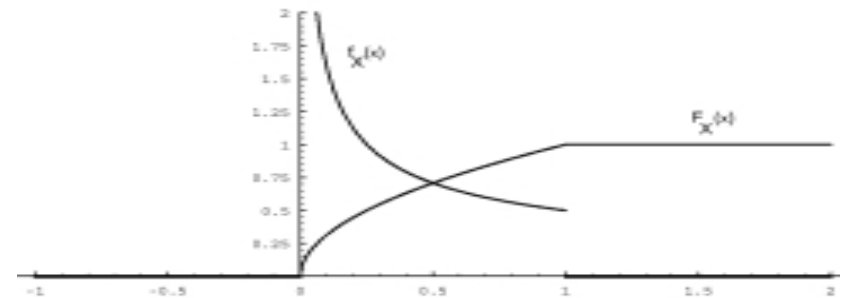
Variabile uniforme



Variabile $X = U^2$ (U=var. unif.)

$$\begin{aligned} F_X(x) &= P(X \leq x) \\ &= P(U^2 \leq x) \\ &= P(U \leq \sqrt{x}) \\ &= \sqrt{x}. \end{aligned}$$

$$F_X(x) = \begin{cases} 0, & \text{if } x \leq 0, \\ \sqrt{x}, & \text{if } 0 \leq x \leq 1, \\ 1, & \text{if } x \geq 1. \end{cases}$$



$$f_X(x) = \begin{cases} 0, & \text{if } x \leq 0, \\ 1/(2\sqrt{x}), & \text{if } 0 \leq x \leq 1, \\ 0, & \text{if } x > 1. \end{cases}$$