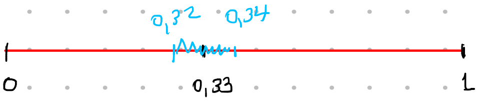
Variáveis Contínuas

$P = \frac{1}{\infty} = 0$?

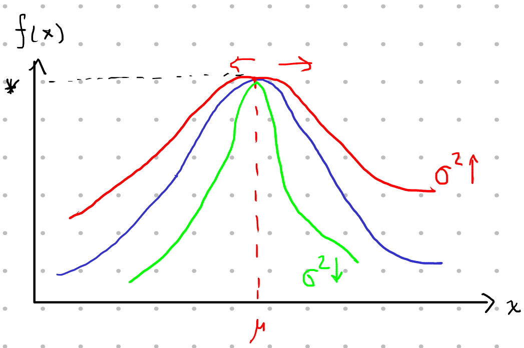
• Modelo Normal



$P = \frac{0{,}02}{1} = 0{,}02$

$P(x = 0{,}33)$

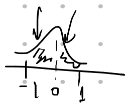
fdp :: $f(x, \mu, \sigma^2) = \dots$



Obs: A normal em verde por ter uma variância menor será deslocada para baixo enquanto que a vermelha será deslocada pra cima.
(ou seja, terão * ≠'s)

$X \sim N(\mu, \sigma^2)$

$X \sim N(0,1)$ ← NORMAL PADRÃO



$\begin{cases} E(X) = \mu \\ Var(X) = \sigma^2 \end{cases}$

• $P(-1 \leq X \leq 1) = 2P(0 \leq X \leq 1) =$

Exemplo

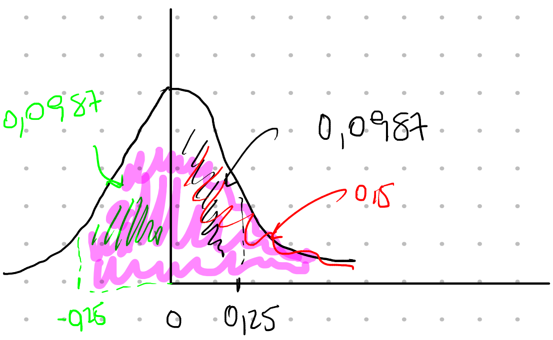
$P(Z \geq 1) = P(\cancel{Z = 1})^{0} + P(Z > 1)$

$Y \sim N(\mu, \sigma^2)$

$Y \sim N(2, 16)$ (σ^2)

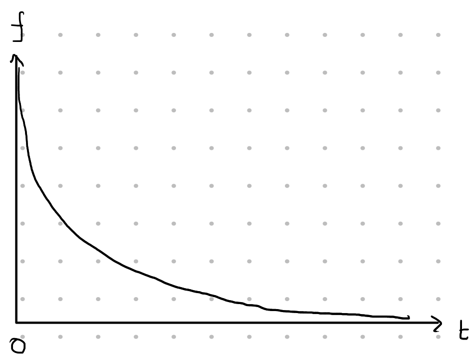
$Z = \frac{Y - \mu}{\sigma} \sim N(0,1)$

$P(Y \geq 1) = P\left(\frac{Y-2}{4} \geq \frac{1-2}{4}\right) = P(Z \geq -0{,}25) = 0{,}0987 + 0{,}5 = 0{,}5987$



Modelo Exponencial

fdp :: $f(t, \beta) = \begin{cases} \frac{1}{\beta} e^{-t/\beta} & \text{se } t \geq 0 \\ 0, & \text{se } t < 0 \end{cases}$

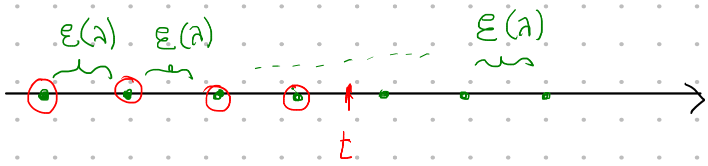


$X \sim Exp(\beta)$

$\begin{cases} E(X) = \beta \\ Var(X) = \beta^2 \end{cases}$

• costumam utilizar λ no lugar do β.

Exponencial + Poisson



Quantd $\sim$ Poisson$\left(\frac{1}{\lambda}\right)$