Markov Chain

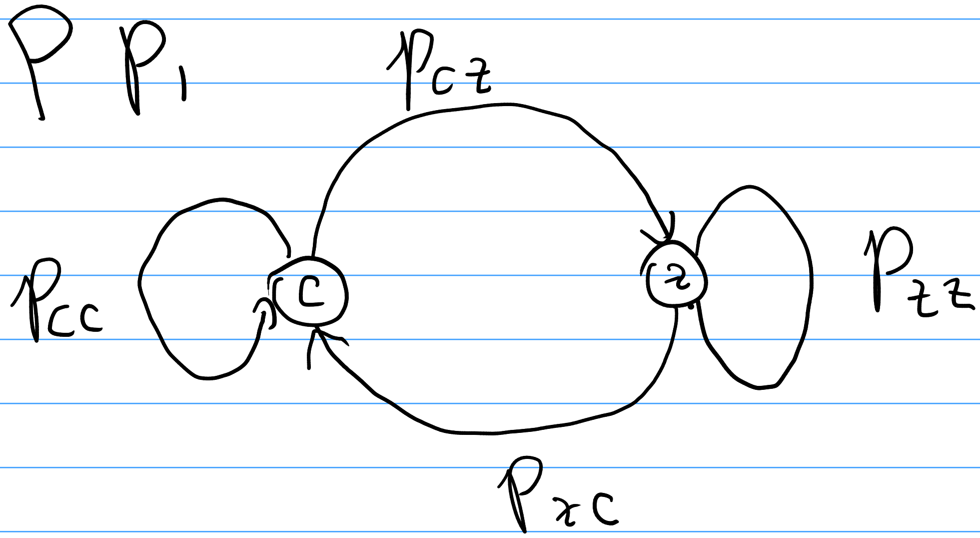
$$[P_c \quad P_t] = [0.3 \quad 0.7]$$

$$\overset{P}{\begin{bmatrix} P_{cc} & P_{cz} \\ P_{cz} & P_{zz} \end{bmatrix}} \begin{bmatrix} 0.3 \\ 0.7 \end{bmatrix} \qquad P_0 = \begin{bmatrix} 0.3 \\ 0.7 \end{bmatrix}$$

$$P = \begin{bmatrix} 0.4 & 0.3 \\ 0.6 & 0.7 \end{bmatrix} \begin{bmatrix} 0.3 \\ 0.7 \end{bmatrix} = P_1$$

$$P_1 = \begin{bmatrix} 0.4 \times 0.3 + 0.7 \times 0.3 \\ 0.6 \times 0.3 + 0.7 \times 0.7 \end{bmatrix} = \begin{bmatrix} 0.33 \\ 0.67 \end{bmatrix}$$

$$P_2 = P \, P_1$$



$$P_n = [A]^n P_0$$

$$P_{n+1} = A P_n$$

$$P_E = A P_E \qquad AV = V$$

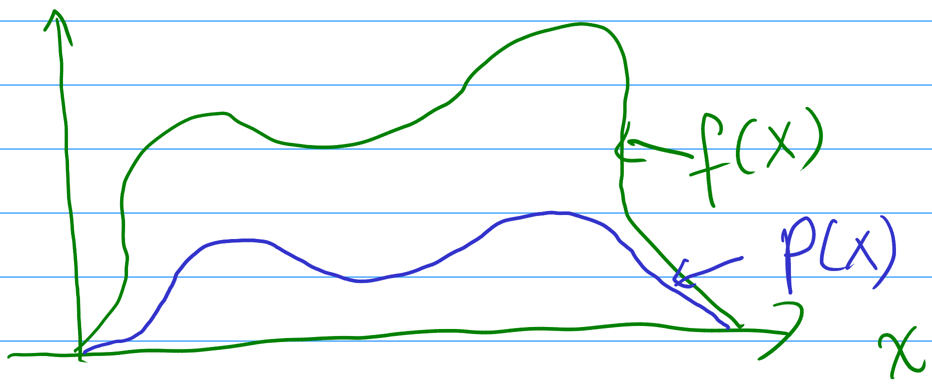
Valor propio

P_E vector propio de A con valor propio 1

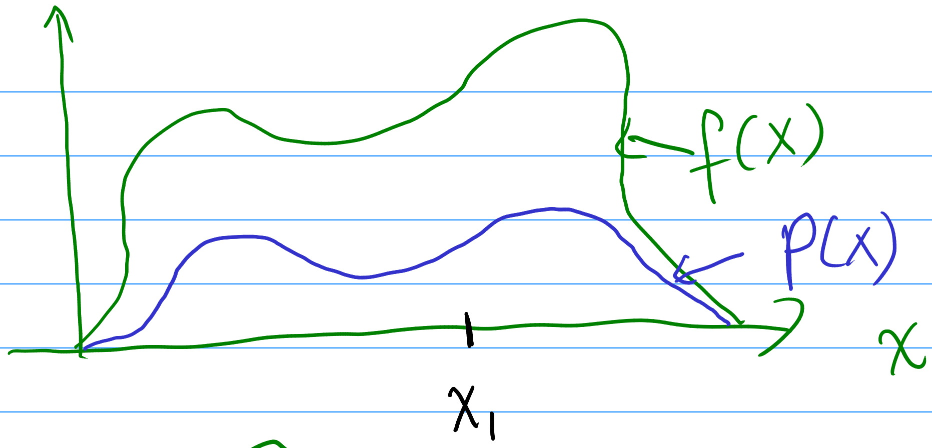
Metropolis-Hastings

Dada una función $f(x)$, obtener una distribución de probabilidad $P(x)$

$$\int P(x)\,dx = 1 \qquad f(x) \rightarrow \int f(x)\,dx \neq 1$$



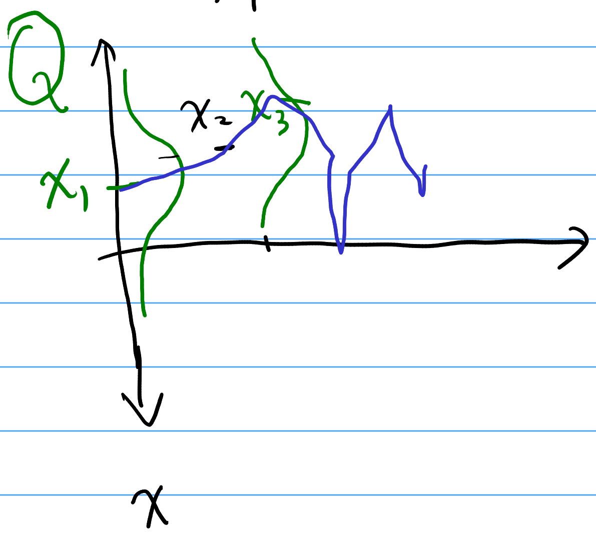
$$f(x) \sim P(x)$$



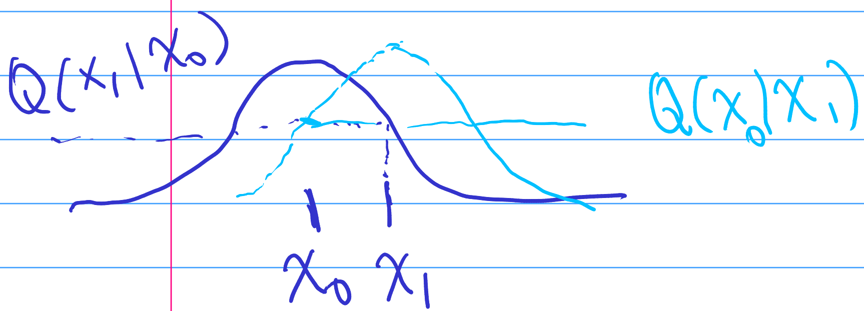
$x_1 \to x_2$

$x_2 \to x_3$

$x_3 \to x_4$



$$a = \frac{f(x_{new})}{f(x_{old})} \frac{Q(x_{old} \mid x_{new})}{Q(x_{new} \mid x_{old})}$$



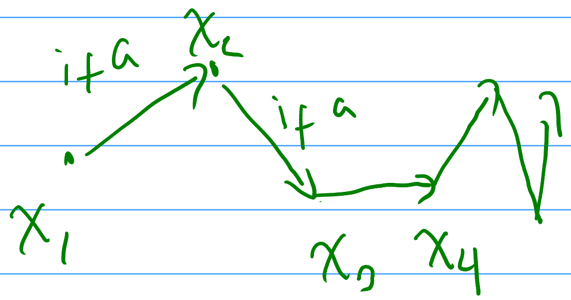
$$Q(x_{old} \mid x_{new}) = Q(x_{new} \mid x_{old})$$

$$a = \frac{f(x_{new})}{f(x_{old})}$$

$x_1 \longrightarrow x_2$ $\quad Q(x)$

$$a = \frac{f(x_2)}{f(x_1)}$$

$f(x_2) > f(x_1)$ $\quad a > 1$



if $a > 1$:

$x_1 = x_2$

if $a < 1$

$x_1 = x_2$ Con probalidad a

if (Not):

$x_1 = x_1$