

Metropolis-Hastings

For $k = 1, 2, \dots$

- Sample x' from a **wrong** $Q(x^k \rightarrow x')$
- Accept proposal x' with probability $A(x^k \rightarrow x')$
- Otherwise stay at x^k

$$x^{k+1} = x^k$$

$$T(x \rightarrow x') = Q(x \rightarrow x')A(x \rightarrow x') \quad \text{for all } x \neq x'$$

$$\begin{aligned} T(x \rightarrow x) &= Q(x \rightarrow x)A(x \rightarrow x) \\ &\quad + \sum_{x' \neq x} Q(x \rightarrow x')(1 - A(x \rightarrow x')) \end{aligned}$$

How to choose A: $\pi(x') = \sum_x \pi(x)T(x \rightarrow x')$