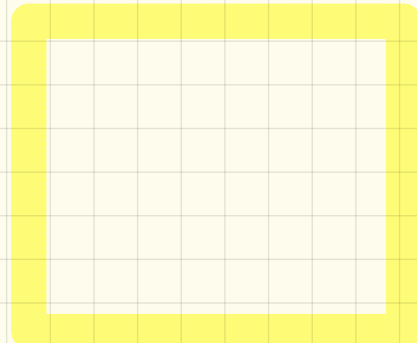


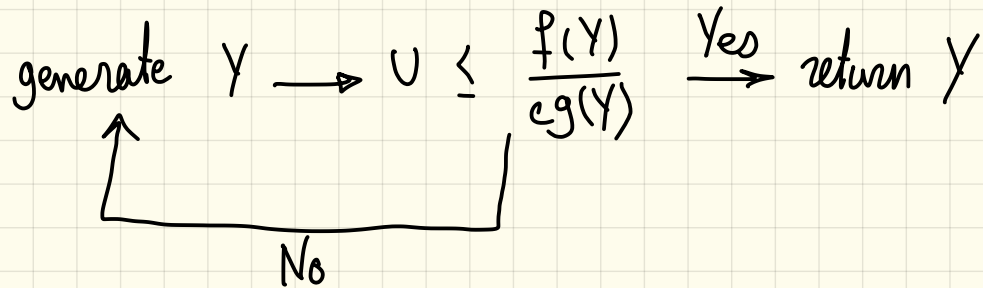
Acceptance/Rejection

$$\left. \begin{array}{l} X \rightarrow f \\ Y \rightarrow g \end{array} \right\} \begin{array}{l} \text{pdf} \\ \text{pdf} \end{array} \quad \left. \begin{array}{l} c \geq 1 \\ c \geq 1 \end{array} \right\} : f(x) \leq cg(x) \quad \forall x$$

1) generate Y

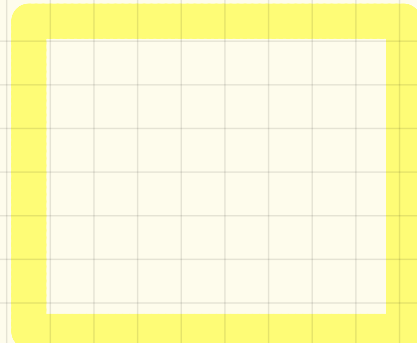
2) accept with probability $\frac{f(Y)}{cg(Y)}$ or return to step 1





Thm. 1) Result has distribution X

2) Runtime is $\text{Geom}(\frac{1}{c})$



Ex. $f(x) = 20x(1-x)^3$ $0 \leq x < 1$

$g(x) = 1$

$\max \frac{f(x)}{g(x)} ?$

$\frac{d}{dx} (20x(1-x)^3) = 20((1-x)^3 - 3x(1-x)^2) = 0 \Rightarrow x = \frac{1}{4}$

$\Rightarrow \frac{f(x)}{g(x)} \leq 20 \times \frac{1}{4} \times \left(\frac{3}{4}\right)^3 = \frac{135}{64} =: c \Rightarrow \frac{f(x)}{cg(x)} = \frac{256}{27} x(1-x)^3$

$U_1 \rightarrow U_2 \leq \frac{256}{27} U_1(1-U_1)^3 \xrightarrow{\text{Yes}} U_1$

No

