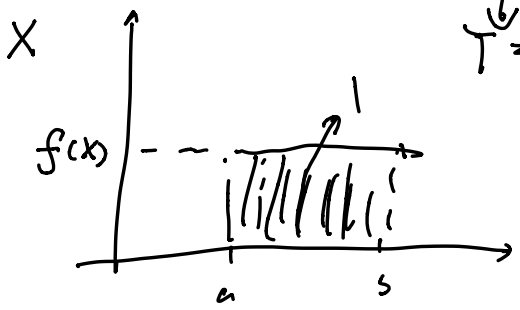
$\int_a^b g(x)\,dx \Leftarrow g(x) \sim X \leftarrow U(a,b)$

$Y = g(X)$



$f(x) = \frac{1}{b-a}$

$X_1 \cdots X_n$

$\downarrow$

$Y_1 \cdots Y_n$

$E(Y) = E[g(X)] = \int_a^b g(x) \cdot f(x)\,dx$

$= \frac{1}{b-a} \int_a^b g(x)\,dx$

$\int_a^b g(x)\,dx = (b-a) \cdot E(Y)$

$= (b-a) E(g(x))$

LLN : $n \to \infty$

$g(X)$ $\quad \bar{Y}_n \quad n = 10,000$

$Y_{10000} \approx E[Y] = E[g(X)] =$