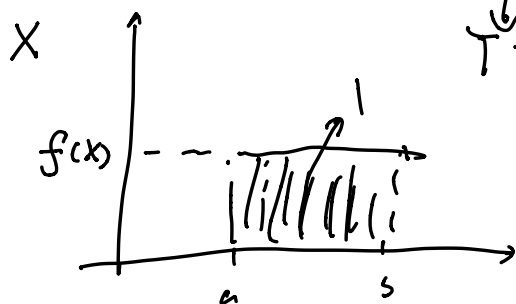


$$\int_a^b g(x) dx \iff g(X) \sim X \leftarrow \underline{U(a, b)}$$



$$\begin{aligned} Y &= g(X) \\ f(x) &= \frac{1}{b-a} \end{aligned}$$

$$X_1 \dots X_n$$

↓

$$Y_1 \dots Y_n$$

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

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

$$\begin{aligned} \underline{\int_a^b g(x) dx} &= (b-a) \cdot E(Y) \\ &= \underline{(b-a) E(g(X))} \end{aligned}$$

LLN: $n \rightarrow \infty$

$$g(X)$$

$$\overline{Y_n}$$

$$\underline{n = 10000}$$

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