Section:- function of random sample / random vector.

Setup:- Let $X_1, \ldots, X_n$ be an r.s. from the dist^n F whose density f^n f. (special case).

OR $(X_1, \ldots, X_n) \xrightarrow{\text{Joint density}} f_{X_1, \ldots, X_n}(x_1, \ldots, x_n)$.

Suppose, want to know the dist^n of $U(X_1, \ldots, X_n)$. (Question).

There are three approaches to solve this problem

i) Distribution function based approach.

ii) Jacobian based approach.

iii) Moment Generating function based approach.