Marginal Densities

1 Why

TODO

2 Definition

The i**th marginal density** of a multivariate density is the density obtained by integrating over every component with a particular component fixed.

Similalry the i, j**th marginal density** of a multivariate density is the density obtained by integrated over every component with the i and jth components fixed.

3 Notation

Let $f : \mathbf{R}^d \to \mathbf{R}$ be a density. For $i = 1, \ldots, d$, let $f_i : \mathbf{R} \to \mathbf{R}$ be defined by

$$f(\xi) = \int_{\left\{x \in \mathbf{R}^d \middle| x_i = \xi\right\}} f$$

for each $\xi \in \mathbf{R}$, Then f_i is the ith marginal density of f.