Marginal Densities

1 Why

TODO

2 Definition

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

Similalry the *i, jth 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 $f : \mathsf{R}^d \to \mathsf{R}$ be a density. For $i = 1, \dots, d$, let $f_i : \mathsf{R} \to \mathsf{R}$ be defined by

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

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