



# 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 *j*th components fixed.

## 3 Notation

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

$$f_i(\xi) = \int_{\{x \in \mathbf{R}^d \mid x_i = \xi\}} f$$

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