

$$\int_0^1 \prod_{j=1}^N \mathrm{d}x_j \, I(\overrightarrow{x}) = \int_0^1 \prod_{j=1}^N \mathrm{d}x_j \, \det \left( \frac{\partial \overrightarrow{z}(\overrightarrow{x})}{\partial \overrightarrow{x}} \right) I(\overrightarrow{z}(\overrightarrow{x}))$$