

$$f(x_1, x_2, \dots, x_n) = f(\bar{x}, \bar{x}, \dots, \bar{x})$$

$$\sum_{i=1}^n x_i = \sum_{i=1}^n \bar{x}$$

$$\downarrow$$
$$n \cdot \bar{x}$$

$$\sum_{i=1}^n x_i = n \cdot \bar{x}$$

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

$$\prod_{i=1}^m X_i$$

=

$$\prod_{i=1}^m \overline{X_i}$$

↓

$$\prod_{i=1}^m X_i$$

=

$$\overline{\prod_{i=1}^m X_i}$$

$$\overline{X}$$

=

$$\overline{\prod_{i=1}^m X_i}$$

$$\prod_{i=1}^m X_i$$