

# Homework 4 question 3

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## 1 Question 3

Consider the following:

$$s_{xy}^2 \approx \overline{xy} - \bar{x}\bar{y} \quad (1)$$

$\overline{xy}$  is the sum of the product  $\approx xy$  divided by  $N$ , likewise  $\bar{x}\bar{y}$  is the product of the means of  $x, y$  respectively then this can be rewritten as the following:

$$s_{xy}^2 \approx \sum_{i=0}^{i-1} \frac{x_i y_i}{N} - \sum_{i=0}^{i-1} \frac{x_i}{N} \sum_{i=0}^{i-1} \frac{y_i}{N} \quad (2)$$