$$s_p^2 = \frac{s_1^2(n_1-1) + s_2^2(n_2-1)}{n_1+n_2-2}$$

$$v = \frac{(s_1^2/n_1 + s_2^2/n_2)^2}{(s_1^2/n_1)^2/(n_1-1) + (s_2^2/n_2)^2/(n_2-1)}$$

$$b_1 = \frac{n\sum_{i=1}^{n} x_i y_i - \left(\sum_{i=1}^{n} x_i\right)\left(\sum_{i=1}^{n} y_i\right)}{n\sum_{i=1}^{n} x_i^2 - \left(\sum_{i=1}^{n} x_i\right)^2} = \frac{\sum_{i=1}^{n}(x_i-\bar{x})(y_i-\bar{y})}{\sum_{i=1}^{n}(x_i-\bar{x})^2}$$

$$b_0 = \frac{\sum_{i=1}^{n} y_i - b_1\sum_{i=1}^{n} x_i}{n} = \bar{y} - b_1\bar{x}.$$

$$S_{xx} = \sum_{i=1}^{n}(x_i-\bar{x})^2, \quad S_{yy} = \sum_{i=1}^{n}(y_i-\bar{y})^2, \quad S_{xy} = \sum_{i=1}^{n}(x_i-\bar{x})(y_i-\bar{y}).$$

$$s^2 = \frac{SSE}{n-k-1}, \quad \text{where} \quad SSE = \sum_{i=1}^{n} e_i^2 = \sum_{i=1}^{n}(y_i-\hat{y}_i)^2.$$

$$SST = \sum_{i=1}^{n}(y_i-\bar{y})^2 = \text{total sum of squares}$$

$$SSR = \sum_{i=1}^{n}(\hat{y}_i-\bar{y})^2 = \text{regression sum of squares.}$$

$$R^2 = \frac{SSR}{SST} = \frac{\sum_{i=1}^{n}(\hat{y}_i-\bar{y})^2}{\sum_{i=1}^{n}(y_i-\bar{y})^2} = 1 - \frac{SSE}{SST}.$$

$$R^2_{\text{adj}} = 1 - \frac{SSE/(n-k-1)}{SST/(n-1)}$$

$$SST = \sum_{i=1}^{k}\sum_{j=1}^{n_i}(y_{ij}-\bar{y}_{..})^2, \qquad SSA = \sum_{i=1}^{k} n_i(\bar{y}_{i.}-\bar{y}_{..})^2,$$

Formulas related to section 11.5 of the reference book