formulario per l'elaborazione di dati sperimentali

medie

$$\overline{X} = \frac{\sum_{i=1,N} x_i}{N} = \frac{\sum_{j=1,M} n_j x_j}{N}$$

$$\sigma_s(X) = \sqrt{\frac{\sum_{i=1,N}(x_i - \overline{X})^2}{N-1}} = \sqrt{\frac{\sum_{j=1,M} n_j (x_j - \overline{X})^2}{N-1}} = \sqrt{\frac{\sum_{i=1,N} x_i^2 - N\overline{X}^2}{N-1}} \qquad \sigma_s(\overline{X}) = \frac{\sigma_s(X)}{\sqrt{N}}$$

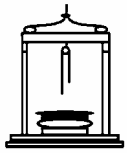
$$X_p = \frac{\sum_{i=1,N} \frac{x_i}{\sigma_i^2}}{\sum_{i=1,N} \frac{1}{\sigma_i^2}} \pm \frac{1}{\sqrt{\sum_{i=1,N} \frac{1}{\sigma_i^2}}}$$

confronti

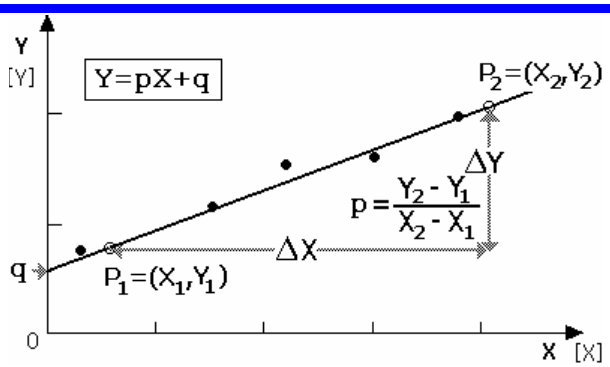
$$\Delta = X - m \qquad \Delta = X_1 - X_2$$

$$s = \frac{X - m}{m} \qquad s = \frac{X_1 - X_2}{\frac{X_1 + X_2}{2}}$$

$$t = \frac{X - m}{\sigma} \qquad t = \frac{X_1 - X_2}{\sqrt{\sigma_1^2 + \sigma_2^2}}$$



A.A. 2003-2004



$$p = \frac{N\sum x_i y_i - \sum x_i \sum y_i}{N\sum x_i^2 - (\sum x_i)^2} \qquad \sigma_p = \frac{\sigma_Y}{\sqrt{N}\sigma_X} = \frac{\sigma_Y}{\sqrt{\sum (x_i - \overline{X})^2}}$$

$$q = \frac{\sum x_i^2 \sum y_i - \sum x_i \sum x_i y_i}{N\sum x_i^2 - (\sum x_i)^2} \qquad \sigma_q = \frac{\sigma_Y}{\sqrt{N}\sigma_X}\sqrt{\sigma_X^2 + \overline{X}^2} = \frac{\sigma_Y \sqrt{\frac{\sum x_i^2}{N}}}{\sqrt{\sum (x_i - \overline{X})^2}}$$

$$\sigma_X = \sqrt{\frac{\sum (x_i - \overline{X})^2}{N}} \qquad \sigma_Y = \sqrt{\frac{\sum [y_i - (p x_i + q)]^2}{N-2}}$$

minimi quadrati

$$Y = f(X_1, X_2, \cdots, X_N) \pm \sqrt{\sum_{i=1,N} \left(\left. \frac{\partial f}{\partial X_i} \right|_{X_1, \cdots, X_N} \right)^2 \sigma^2(X_i)} \qquad Y = c X_1^{p_1} X_2^{p_2} \cdots X_N^{p_N} \pm Y \sqrt{\sum_{i=1,N} p_i^2 \left(\frac{\sigma(X_i)}{X_i} \right)^2}$$

misure derivate