$$= \sum_{i=0}^{N} [y_i - (w_1 * x_i + w_0)]^2$$

$$= \sum_{i=0}^{N} [y_i^2 - 2 * y_i * (w_1 * x_i + w_0) + (w_1 * x_i + w_0)^2]$$

$$= \sum_{i=0}^{N} [y_i^2 - 2 * y_i * w_1 * x_i - 2 * y_i * w_0 + (w_1 * x_i + w_0)^2]$$

$$= \sum_{i=0}^{N} [y_i^2 - 2 * y_i * w_1 * x_i - 2 * y_i * w_0 + (w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - \sum_{i=0}^{N} [2 * y_i * w_1 * x_i - 2 * y_i * w_0 + (w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - \sum_{i=0}^{N} [2 * y_i * w_1 * x_i] - \sum_{i=0}^{N} [2 * y_i * w_0 + (w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2 * w_1 * \sum_{i=0}^{N} [y_i * x_i] - \sum_{i=0}^{N} [2 * y_i * w_0 + (w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2 * w_1 * \sum_{i=0}^{N} [y_i * x_i] - \sum_{i=0}^{N} [2 * y_i * w_0] + \sum_{i=0}^{N} [(w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2 * w_1 * \sum_{i=0}^{N} [y_i * x_i] - 2 * w_0 * \sum_{i=0}^{N} [y_i] + \sum_{i=0}^{N} [(w_1 * x_i)^2 + 2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2 * w_1 * \sum_{i=0}^{N} [y_i * x_i] - 2 * w_0 * \sum_{i=0}^{N} [y_i] + \sum_{i=0}^{N} [(w_1 * x_i)^2] + \sum_{i=0}^{N} [2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2 * w_1 * \sum_{i=0}^{N} [y_i * x_i] - 2 * w_0 * \sum_{i=0}^{N} [y_i] + w_1^2 * \sum_{i=0}^{N} (x_i)^2 + \sum_{i=0}^{N} [2 * w_1 * x_i * w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2w_1 \sum_{i=0}^{N} [y_i x_i] - 2w_0 \sum_{i=0}^{N} [y_i] + w_1^2 \sum_{i=0}^{N} (x_i)^2 + \sum_{i=0}^{N} [2w_1 x_i w_0 + w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2w_1 \sum_{i=0}^{N} [y_i x_i] - 2w_0 \sum_{i=0}^{N} [y_i] + w_1^2 \sum_{i=0}^{N} (x_i)^2 + \sum_{i=0}^{N} [2w_1 x_i w_0] + \sum_{i=0}^{N} [w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2w_1 \sum_{i=0}^{N} [y_i x_i] - 2w_0 \sum_{i=0}^{N} [y_i] + w_1^2 \sum_{i=0}^{N} (x_i)^2 + 2w_1 w_0 \sum_{i=0}^{N} [x_i] + \sum_{i=0}^{N} [w_0^2]$$

$$= \sum_{i=0}^{N} [y_i^2] - 2w_1 \sum_{i=0}^{N} [y_i x_i] - 2w_0 \sum_{i=0}^{N} [y_i] + w_1^2 \sum_{i=0}^{N} (x_i)^2 + 2w_1 w_0 \sum_{i=0}^{N} [x_i] + w_0^2 N$$

$$\frac{\sum_{i=0}^{N} y_i^2}{N} = \bar{y}$$

$$\sum_{i=0}^{N} y_i^2 = \bar{y} * N$$