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$$E(x_{\bar{i}}) = \mu \quad V(x_{\bar{i}}) = \sigma^2 = E(x_{\bar{i}}^2) - \mu^2$$

$$\rightarrow E(\bar{x}) = \mu, \quad V(\bar{x}) = \frac{\sigma^2}{n} = E(\bar{x}^2) - \mu^2$$

$$E(\hat{\theta}_1) = E\left(\frac{\sum (x_{\bar{i}} - \bar{x})^2}{n}\right)$$

$$= \frac{1}{n} E(\sum x_{\bar{i}}^2 - n \bar{x}^2)$$

$$= \frac{1}{n} (n \sigma^2 + n \mu^2 - \sigma^2 - n \mu^2)$$

$$= \frac{n-1}{n} \sigma^2$$

$$E(\hat{\theta}_1) = E(\bar{X}) = E\left(\frac{X_1 + X_2}{2}\right) = \mu$$

打字來輸入說明。