Til minnis

$$W = t(\mathbf{X})$$

MSE

$$E_\theta\left[(W-\theta)^2\right] = E_\theta\left[(W - E_\theta[W])^2\right] + (E_\theta[W]-\theta)^2$$

CR1

$$V_\theta[W] \geq \frac{\left(\frac{d}{d\theta}E_\theta[W]\right)^2}{E_\theta\left[\left(\frac{\partial}{\partial\theta} ln f_\theta(\mathbf{X})\right)^2\right]}$$

CR2

$$V_\theta[W] \geq \frac{1}{-nE_\theta\left[\frac{\partial^2}{\partial\theta^2} ln f_\theta(X_1)\right]}$$

LRT

$$\lambda(\mathbf{x}) = \frac{\sup_{\Theta_0} L_{\mathbf{x}}(\theta)}{\sup_{\Theta} L_{\mathbf{x}}(\theta)}$$

NP

$$f_{\theta_1}(\mathbf{x}) > k f_{\theta_0}(\mathbf{x})$$

$$\beta(\theta) = P_\theta[\phi(\mathbf{X}) = 1]$$

$$\hat{\beta} = \frac{\Sigma(x-\bar{x})(y-\bar{y})}{\Sigma(x-\bar{x})^2}$$

$$V\left[\hat{\beta}\right] = \frac{\sigma^2}{\Sigma(x-\bar{x})^2}$$

$$V_\theta\left[h\left(\hat{\theta}\right)\right] \simeq \frac{\left[h'(\hat{\theta})\right]^2}{-\left.\frac{\partial^2}{\partial\theta^2} ln L_{\mathbf{x}}(\theta)\right|_{\theta=\hat{\theta}}}$$