

Test 2 - Formula Sheet 201-316-VA

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1} = \frac{1}{n-1} \left[\sum x_i^2 - \frac{(\sum x_i)^2}{n} \right]$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}, \quad P(A \cap B) = P(A|B) \times P(B) = P(B|A) \times P(A)$$

$$P(B|A) = \frac{P(A|B)P(B)}{P(A)}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$\mu = E(X) = \sum x_i P(X = x_i), \quad \sigma^2 = \sum (x_i - \mu)^2 P(X = x_i)$$

$$P(X = x) = C_x^n \cdot p^x \cdot (1-p)^{n-x} \quad E(x) = \mu = n \cdot p \quad ; \quad V(X) = \sigma^2 = n \cdot p \cdot (1-p)$$

$$Z = \frac{X - \mu}{\sigma} \quad X = Z\sigma + \mu$$

$$Z = \frac{\bar{X} - \mu_{\bar{x}}}{\sigma_{\bar{x}}} \quad ; \quad \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$$

$$\bar{x} \pm Z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}} \quad ; \quad n = \left(\frac{Z_{\alpha/2} \sigma}{E} \right)^2$$

$$\bar{x} \pm t_{\alpha/2, n-1} \cdot \frac{s}{\sqrt{n}} \quad ; \quad n = \left(\frac{t_{\alpha/2, n-1} s}{E} \right)^2$$

$$\hat{p} \pm Z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \quad ; \quad n = \hat{p}(1-\hat{p}) \left(\frac{Z_{\alpha/2}}{E} \right)^2$$

$$Z_t = \frac{\bar{x} - k}{\sigma/\sqrt{n}} \quad ; \quad T_t = \frac{\bar{x} - k}{s/\sqrt{n}}$$