Test 3 - Formula Sheet 201-SN1-05

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

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

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

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

Condition	Correction Factor
$P(X = a)$	$P(a - 0.5 < X < a + 0.5)$
$P(X > a)$	$P(X > a + 0.5)$
$P(X \geq a)$	$P(X > a - 0.5)$
$P(X < a)$	$P(X < a - 0.5)$
$P(X \leq a)$	$P(X < a + 0.5)$

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

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

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

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

$$Z_t = \frac{\overline{x} - k}{\sigma/\sqrt{n}} \quad ; \quad T_t = \frac{\overline{x} - k}{s/\sqrt{n}} \quad ; \quad Z_t = \frac{\hat{p} - k}{\sqrt{\frac{k(1-k)}{n}}}$$