MATH-338 Final Cheat Sheet [¡++¿]

TERMS

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FORMULAS

- $\sqcap = (b-a) \times \frac{1}{(b-a)}$ (finite curve)
- $Z = \frac{x-\mu}{\sigma}$ (z-score)
- $X \sim N(\mu\,, \sigma)$
- $\bar{X} \sim N(\mu, \frac{\sigma}{\sqrt{n}})$
- $SEM = \frac{s}{\sqrt{n}}$ (compute standard error)
- $t = \frac{\bar{X}-\mu_0}{\frac{s}{\sqrt{n}}}$ [NP]
- $t = \frac{\bar{x}}{\frac{s_{\mathrm{d}}}{\sqrt{n}}}$ [matched pair]
- $t = \frac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\frac{(s_1)^2}{n_1} + \frac{(s_2)^2}{n_2}}} \sim t(K)$ [NHST]
- $(\bar{x} \pm t^{**} \times \frac{s}{\sqrt{n}})$ [confidence interval]
- $\bar{x} - t^{**} \times \frac{s}{\sqrt{n}} < \mu < \bar{x} + t^{**} \times \frac{s}{\sqrt{n}}$ [confidence interval when sample mean given]
- IQR $= Q_3 - Q_1$
- $K = 1.5$
- Lower fence: $Q_1 - K \times IQR$
- Upper fence: $Q_3 + K \times IQR$
- $t = \frac{\Delta\bar{x} - \Delta\mu}{\frac{\Delta\bar{s}}{\sqrt{n}}}$
- $df = n - 1$
- df(treatment) $= k - 1$ (k) $\leftarrow$ number of categories
- df(error) $= N - k$ (N) $\leftarrow$ total sample size.
- $MSTr = SSTr/(k-1)$ SSTr $\leftarrow$ sum of treatment
- $MSE = SSE/(N-k)$ SSE $\leftarrow$ sum of error
- $F = \frac{\mathrm{MSTr}}{\mathrm{MSE}}$
- $C = 1 - \alpha$ [confidence level]
- $((\bar{x}_1 - \bar{x}_2) - t^{**} \times \sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2}}), ((\bar{x}_1 - \bar{x}_2) + t^{**} \times \sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2}})$ [qt($\frac{\alpha}{2}$, 347.41, lower.tail = F) $\implies t^{**}$]