STAT 3331 – Exam 1 Formula Sheet

$$\bar{X} = \frac{1}{\mathrm{n}}(\Sigma \mathrm{x_i})$$

$$s = \sqrt{s^2}$$

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

$$CV = \left(\frac{s}{\bar{x}} \times 100\right)\%$$

$$L_p = \frac{p}{100}(n+1)$$

$$IQR = Q_3 - Q_1$$

$$s_{xy} = \frac{1}{n-1}\left[\Sigma(\mathrm{x_i} * \mathrm{y_i}) - \frac{1}{\mathrm{n}}\left((\Sigma \mathrm{x_i}) * (\Sigma \mathrm{y_i})\right)\right] = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{n-1}$$

$$r = \frac{s_{xy}}{s_x * s_y}$$

$$P(A^C) = 1 - P(A)$$

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

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

$$E(X) = \Sigma[x_i * P(X = x_i)]$$

$$Var(X) = \Sigma[x_i^2 * P(X = x_i)] - \left(E(X)\right)^2$$

$$f(x) = \frac{1}{n}$$

$$f(x) = \binom{n}{x} p^x (1-p)^{(n-x)}$$

$$f(x) = \frac{\mu^x e^{-\mu}}{x!}$$

$$P(x \le x_0) = \frac{x_0 - a}{b-a}, \quad a \le x \le b$$

$$P(x \le x_0) = \begin{cases} \dfrac{(x_0 - a)^2}{(b-a)(m-a)}, & a \le x_0 \le m \\ 1 - \dfrac{(b - x_0)^2}{(b-a)(b-m)}, & m \le x_0 \le b \end{cases}$$

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

$$P(x \le x_0) = 1 - e^{-\frac{x_0}{\mu}}$$

$$Z = \frac{X - \bar{X}}{s}$$

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

$$t = \frac{\bar{X} - \mu}{s/\sqrt{n}}$$

$$Z = \frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}}$$

$$\bar{X} \pm t_{df,\alpha/2}\frac{s}{\sqrt{n}}$$

$$\bar{p} \pm Z_{\alpha/2}\sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$