MATH 254 – Final Exam Cheat Sheet

$$s^2 = \frac{1}{n-1}\sum (x_i - \bar{x})^2$$

$$z = \frac{x - \mu}{\sigma}$$

$$r = \frac{1}{n-1}\sum \left(\frac{x_i - \bar{x}}{s_x}\right)\left(\frac{y_i - \bar{y}}{s_y}\right)$$

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

$$\mu_X = \sum x_i p_i$$

$$\mu_{a+bX} = a + b\mu_X$$

$$\mu_{X+Y} = \mu_X + \mu_Y$$

$$\sigma_X^2 = \sum (x_i - \mu_X)^2 \, p_i$$

$$\sigma_{a+bX}^2 = b^2\sigma_X^2$$

$$\sigma_{X+Y}^2 = \sigma_X^2 + \sigma_Y^2 + 2\rho\sigma_X\sigma_Y$$

$$\sigma_{X-Y}^2 = \sigma_X^2 + \sigma_Y^2 - 2\rho\sigma_X\sigma_Y$$

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

$$\mu_X = np$$

$$\sigma_X = \sqrt{np(1-p)}$$

$$\mu_{\hat{p}} = p$$

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}}$$

$$P(X = k) = \left(\begin{array}{c} n \\ k \end{array} \right) p^k \left(1 - p\right)^{n-k}$$

$$\left(\begin{array}{c} n \\ k \end{array} \right) = \frac{n!}{k!\left(n - k\right)!}$$