

STAT 109 Final Exam Formula Sheet

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

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

$$r = \frac{\sum(z_x z_y)}{n - 1} = \frac{\sum[(x - \bar{x})(y - \bar{y})]}{(n - 1)(s_x)(s_y)} = \frac{n \sum(xy) - (\sum x)(\sum y)}{\sqrt{n \sum(x^2) - (\sum x)^2} \sqrt{n \sum(y^2) - (\sum y)^2}}$$

$$\hat{y} = mx + b$$

$$m = r \frac{s_y}{s_x} = \frac{n \sum xy - (\sum x)(\sum y)}{n \sum(x^2) - (\sum x)^2}$$

$$b = \bar{y} - m\bar{x}$$

$$N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$$

$$N\left(p, \sqrt{\frac{pq}{n}}\right)$$

$$E = z_c \cdot SE$$

$$SE(\hat{p}) = \sqrt{\frac{pq}{n}}$$

$$SE(\bar{x}) = \frac{\sigma}{\sqrt{n}}$$

$$E(X) = \sum(x \cdot P(x))$$

$$\text{Var}(X) = \sum[(x - E(X))^2 \cdot P(x)]$$