STAT 1150 Formula Sheet

1. $s = \sqrt{\dfrac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$

2. $z = \dfrac{\hat{p} - p}{\sqrt{\dfrac{p(1-p)}{n}}}$

3. $n = \left(\dfrac{z^*\sigma}{m}\right)^2$

4. $\hat{p} \pm z^* \sqrt{\dfrac{\hat{p}(1-\hat{p})}{n}}$

5. $n = \left(\dfrac{z^*}{m}\right)^2 p^*(1-p^*)$

6. $z = \dfrac{\hat{p} - p_0}{\sqrt{\dfrac{p_0(1-p_0)}{n}}}$

7. $\bar{x}_d \pm t^* \dfrac{s_d}{\sqrt{n}}$

8. $t = \dfrac{\bar{x}_d}{s_d/\sqrt{n}}$

9. $\bar{x}_1 - \bar{x}_2 \pm t^* \sqrt{s_p^2 \left(\dfrac{1}{n_1} + \dfrac{1}{n_2}\right)}$

10. $t = \dfrac{\bar{x}_1 - \bar{x}_2}{\sqrt{s_p^2 \left(\dfrac{1}{n_1} + \dfrac{1}{n_2}\right)}}$

where $\quad s_p^2 = \dfrac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1 + n_2 - 2}$

11. $\bar{x}_1 - \bar{x}_2 \pm t^* \sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}$

12. $t = \dfrac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$

13. $r = \dfrac{1}{(n-1)s_x s_y} \displaystyle\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})$

14. $b_1 = r\dfrac{s_y}{s_x} = \dfrac{\displaystyle\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\displaystyle\sum_{i=1}^{n} (x_i - \bar{x})^2}$

15 $b_0 = \bar{y} - b_1\bar{x}$

16. $s_e = \sqrt{\dfrac{\displaystyle\sum_{i=1}^{n} (y_i - \hat{y}_i)^2}{n-2}}$

17. $\hat{y} \pm t^* SE_{\hat{\mu}}$

where $\quad SE_{\hat{\mu}} = s_e \sqrt{\dfrac{1}{n} + \dfrac{(x^* - \bar{x})^2}{\displaystyle\sum_{i=1}^{n} (x_i - \bar{x})^2}}$

18. $b_1 \pm t^* SE_{b_1}$

19. $t = \dfrac{b_1}{SE_{b_1}}$

where $\quad SE_{b_1} = \dfrac{s_e}{\sqrt{\displaystyle\sum_{i=1}^{n} (x_i - \bar{x})^2}}$