

**Stat303: Statistical Methods**

Homework 09 (08/04/2009)

*Instructor: Jin, Ick Hoon*

1. The "percent of variation in the dependant variable explained by the independent variable" is defined to be  $R^2$ .
2.  $\sigma^2$  is estimated by  $s^2 = \frac{SSE}{n-2} = MSE$
4. CI for  $\beta_1$  is  $(b_1 \pm t^*SE_{b_1})$  where  $t^*$  is from t table with  $df=n-2$  and corresponding Confidence Level on the bottom.
5. Use "Simple Linear Regression" applet on STAT30X to find the values in part(b)
6. Use "Simple Linear Regression" applet on STAT30X
7. Use "Simple Linear Regression" applet on STAT30X. F distribution can only take non-negative values so the lowest value F can take is 0.
8. Use StatCrunch to find the "summary statistics". Use "Simple Linear Regression" applet on STAT30X for part(c)
9.
  - $df_{\text{Regression}} + df_{\text{Error}} = df_{\text{Total}}$
  - $SS_{\text{Regression}} + SS_{\text{Error}} = SS_{\text{Total}}$
  - $MSE_{\text{Error}} = SSE_{\text{Error}} / df_{\text{Error}}$
  - $F = MS_{\text{Regression}} / MSE_{\text{Error}}$ .
  - $R^2 = SS_{\text{Regression}} / SS_{\text{Total}}$
10. Use "Simple Linear Regression" applet on STAT30X
12. Test Statistic  $t = \frac{b_1}{SE_{b_1}}$  and for given n find the range for p-value using  $df=n-2$ , remember, it's a "two-sided" test.