Economics 312
Daily Problem #11

Spring 2020
Valentine's Day

Consider once again the multiple regression with dependent variable of grade in Econ 201. The regressors are high-school GPA, verbal and math SAT scores (divided by 100 for scaling), female dummy, and the inverted reader rating (5 is best).

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. reg gpoints hsgpa satv100 satm100 female

      Source |       SS           df       MS      Number of obs   =       405
-------------+----------------------------------   F(4, 400)       =     11.63
       Model |  31.5318792         4  7.88296979   Prob > F        =    0.0000
    Residual |  271.017899       400  .677544747   R-squared       =    0.1042
-------------+----------------------------------   Adj R-squared   =    0.0953
       Total |  302.549778       404  .748885589   Root MSE        =    .82313

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     gpoints |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       hsgpa |   .5723204   .1116918     5.12   0.000      .3527441    .7918967
     satv100 |   .0924651   .0614782     1.50   0.133     -.0283956    .2133258
     satm100 |    .15441    .0683045     2.26   0.024      .0201293    .2886907
      female |   .0192882   .0910424     0.21   0.832     -.1596932    .1982697
       _cons |  -.9125915   .5730471    -1.59   0.112     -2.039152    .2139689
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1. Verify the 95% confidence interval that Stata computes for the coefficient of hsgpa using the reported standard error and the critical values of the *t* distribution.

2. What would the 99% confidence interval be? (Use the two-tailed 0.01 critical values from Wooldridge's Table G.2.)

3. Verify the *t* statistic that Stata computes for the coefficient of hsgpa using the estimated coefficient and its standard error. What null hypothesis does this *t* statistic test? What is the conclusion of the test at a 5% and a 1% level of significance? Is this consistent with the results from your confidence intervals in the last two problems? How is this result related to the *p* value in the table?

4. For each of the coefficients in the table, discuss the results of testing the hypothesis that the coefficient equals zero. Interpret these results.