

Very Sketchy Key to exam 3, eco 311, spring 2014. Your answers should be **more detailed**.

Q1: Adjusted R-squared increases only if the t value of the additional regressor is sufficiently large. In other words, it penalizes inclusion of irrelevant regressors

Q2: We need to standardize y and x , and obtain their z-scores. Then regress the standardized y onto the standardized x .

Q3: Holding area constant, an additional bathroom is associated with 27% increase in rprice

Q4: The marginal effect is not constant since the squared term is statistically significant.

Q5: $-\frac{\hat{\beta}_1}{2\hat{\beta}_2} = 4.65$

Q6: The average SAT is 1036.054 for a non-athlete student

Q7: On average, the SAT of an athlete student is 122.0331 lower than a non-athlete student.

Q8: The two-sample t test is just the t value for the variable athlete. Because the p-value is less than 0.05, we reject the null hypothesis that there is no difference in SAT between athlete and non-athlete students.

Q9: Generate the interaction term of gender and athlete. The unrestricted regression is $\text{reg sat athlete gender gender*athlete}$; the restricted regression is reg sat athlete ; save the two RSSs, and then compute the F test.

Q10: Defines three dummies, but use only two of them. $D1 = 1$ if $x = 1$, and $D1=0$ otherwise; $D2 = 1$ if $x = 2$, and $D2=0$ otherwise; $D3 = 1$ if $x = 3$, and $D3=0$ otherwise.

Q11: Nonconstant variance of the error term. $\text{var}(u|x) = h_i \neq \sigma^2$.

Q12: The null hypothesis of BP test is homoskedasticity. We need to report heteroskedasticity robust standard error and t value, or obtain the weighted least squared estimator if the null hypothesis is rejected.

Q13: $\text{var}(e) = \text{var}(\beta_2 x^2 + u) = \beta_2^2 x^4 + \sigma^2 \neq \sigma^2$

Q14: Ordering matters for time series data. In general we cannot assume time series data are independent.

Q15: Regress real GDP onto money supply and its lagged values. The null hypothesis is that the sum of multipliers equals zero. To test that hypothesis we need to fit a transformed regression in which the regressors are x_t , $x_{t-1} - x_t$, $x_{t-2} - x_t$, and so on. Test the hypothesis that the coefficient of x_t is zero.

Q16: room is trending because tr is statistically significant.

Q17: $\widehat{room}_{T+1} = 1.947 * 169 + (-36.14) * (1) + 63.65 * (0) + 188.24 * (0) + 503.82 = 796.72$