Brief Key and Discussion for Practice Exam 2.

More detailed answers are expected **for actual exams. The format and difficult level of actual exam are comparable to the practice exam**

- Q1: Increasing area by one percent is associated with rprice rising by 393.41 dollar, holding constant bath and bathage
- Q2: $H_0 : \beta_3 = 0$. The t value is $t = \frac{-54.67306}{16.19152}$, which is greater than 1.96 in absolute value. So we reject the null hypothesis.
- Q3: Victor believes area has *constant* marginal effect on rprice, so the level-level model is appropriate. If the marginal effect is *diminishing*, then the level log model is appropriate
- Q4: See page 11 of Lecture 3 slides
- Q5: The parabola is downward facing. so as x rises, first y rises at decreasing rate. After the turning point, y falls at increasing rate. The squared term is necessary if the t value of β_2 exceeds 1.96 in absolute value or the p value is less than 0.05.
- Q6: $0.2518651 * 19.281974 = 4.856456$, which is the average wage for unmarried people
- Q7: The average wage for married people is greater than unmarried people by 1.730106
- Q8: $t = \frac{1.730106}{0.3229133} = 5.357803 > 1.96$, implying that there is difference in average wage across two genders
- Q9: Since the t value in Q8 implies the significance of married, value 0 is outside the confidence interval
- Q10: See page 20 of Lecture 4 slides for more details. The restricted regression is $wage = \beta_0 + \beta_1 exper$; The unrestricted regression is $wage = \beta_0 + \beta_1 exper + \beta_2 married + \beta_3 exper * married$. We need to run an F test (Chow Test) for the hypothesis $H_0 : \beta_2 = 0, \beta_3 = 0$
- Q11: Let dummy variable one D_1 equal one for black people, and dummy variable two D_2 equal one for white people. Run the regression $wage = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + u$. The base group is other people. See NBA slides for more details.
- Q12: See items 4, 5, and 6 on page 2 of NBA slides

- Q13: See pages 15-17 of Lecture 5 slides
- Q14: The average wage of married male is greater than unmarried male by 2.818605; The average wage of unmarried female is less than unmarried male by 0.557812
- Q15: $5.181395 + 2.818605 = 8$
- Q16: If we drop inta, then we assume gender does not matter for the wage gap between unmarried and married people (no interaction effect), or equivalently, we assume marital status does not matter for the wage gap across two genders
- Q17: See Q6 of HW2