Econ 325 Section 003: Worksheet for Hypothesis Testing 1[1]

Name and Student No. _____

Question 1 *On Oct 24 of 2016, the survey was conducted in Florida after the final presidential debate. Let p = population fraction of Clinton supporters. Among $n = 1166$ likely registered voters, who support either Clinton or Trump, there are 602 Clinton voters and 564 Trump voters so that $\hat{p} = 602/1166 = 0.516$. Test $H_0 : p \leq 0.5$ at the significance level $\alpha = 0.10$. We use the Central Limit Theorem to approximate the distribution of $\hat{p}$.*

Step 1: Derive the distribution of $\hat{p}$ when the null hypothesis of $p = 0.5$ is true.

Step 2: Find the value of C, which is called critical value, such that $P(\hat{p} > C) = 0.1$ when $H_0 : p = 0.5$ is true. The rejection region is given by $[C, \infty)$.

Step 3 and 4: Does the realized value of $\hat{p}$ fall in the rejection region or not? If so, this means that something unlikely happens if $H_0 : p \leq 0.5$. We reason that this is because the assumption of $H_0 : p \leq 0.5$ is false. Therefore, we reject $H_0 : p \leq 0.5$.

Question 2 *On Oct 24 of 2016, the survey was conducted in Florida after the final presidential debate. Let $p =$ population fraction of Clinton supporters. Among $n = 1166$ likely registered voters, who support either Clinton or Trump, there are 602 Clinton voters and 564 Trump voters so that $\hat{p} = 602/1166 = 0.516$. What is the p-value of testing $H_0 : p \leq 0.5$? We use the Central Limit Theorem to approximate the distribution of $\hat{p}$.*

Question 3 *On Oct 27 of 2016, the survey was conducted in Virginia after the final presidential debate. Let $p =$ population fraction of Clinton supporters. Among $n = 921$ likely registered voters in the sample, who support either Clinton or Trump, there are 53.3 percent of them support Clinton, i.e., $\hat{p} = 53.3$. On November 8 of 2016, 52.9 percent of voters who support either Clinton or Trump voted for Clinton so that the true population fraction of Clinton supporter is $p = 0.529$. Suppose that we test $H_0 : p \leq 0.5$ at the significance level $\alpha = 0.10$ using the random sample of $n = 921$ likely registered voters. What is the power of the test?*