Tests Using Confidence Intervals

1. A Gallup Poll found that 59% of the people in its random sample of 1033 U.S. adults said "Yes" when asked, "Would you like to lose weight?"

a. Construct and interpret a 95% confidence interval for the proportion of U.S. adults who would like to lose weight.

b. Does this interval provide convincing evidence that the actual proportion of U.S. adults who would say they want to lose weight differs from 0.54? Explain and state the α-level of this test.

c. What if our null hypothesis was $p = 0.61$? Is there convincing evidence that $p \neq 0.61$?

2. State records from 1950 state that the mean height of all eighth graders in Minnesota was 62 inches with a standard deviation of 4.2 inches. A simple random sample of 40 eighth graders taken this year had a mean height of 63 inches.

a. Construct and interpret a 90% confidence interval for the mean height of all current Minnesota eighth graders based on this sample.

b. What would the significance level α need to be in order to use the results of the confidence interval above to carry out a two-sided significance test?

c. Using the significance level α you found in (a), carry out a significance test of

H_0: $\mu = 62$ inches

H_a: $\mu \neq 62$ inches

using the confidence interval from above. Just state the decision and conclusion (parts M and S of PHANTOMS).