1. Suppose in a Case 3 left-tailed test we are using $\alpha = 0.001$. What would the rejection region be?

   Reject H_0 if $TS < -3.090$

2. In a Case 2, two-tailed test based on a sample of size 17, the TS is found to be 2.56. What would the P-value be?

   $0.02 < P < 0.05$

3. Suppose in another setting we have the following values: $\bar{X} = 11.3$, $s = 5.5163761$, $n = 45$, and $\mu_0 = 12$. Find the TS in this setting.

   $$\frac{11.3-12}{\frac{5.5163761}{\sqrt{45}}} = -0.85$$

4. An African-American lawyer with a good credit history notices that the same bank that refused to finance his loan for the purchase of a house approved a friend with a questionable credit history. He suspects that race may have played a role. To be impartial, he asks a friend in the financial industry to gather data about home loan refusal rates by race in banks in his area. The friend knows the overall refusal rate in the area is 20%, so she plans to gather the refusal rate for African-American customers at 15 randomly selected banks in his area. Then she will analyze the data to see if this is enough evidence, at the 0.01 level, to conclude that the mean refusal rate for African-American customers for all banks in Virginia is more than 20%. Write out the hypotheses step for this setting.

   H_0: $\mu \leq 20\%$
   H_a: $\mu > 20\%$

   Where: μ is the mean refusal rate for African-American customers for all banks in this area

5. What would the conditions step look like in the previous problem?

   We have independent, random observations from a normally distributed population, with unknown variance. (not told about normality)

6. Suppose that the P-value in this setting was 0.0001. What conclusion would you make?

   We have strong evidence ($P = 0.0001$) to suggest that the mean refusal rate for African-American customers for all banks in this area is more than 20%.