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MATH 301
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HMWK 1

* 1. (a) The observed average 45.31 is greater than the actual (20) by more than 5.26. Furthermore, after carrying out a significance test at 0.01, the z score was found to be 8.34, which falls into the rejection region as it is greater than 7.76. In the end, the result does not surprise me.

(b)

* 2. (a) Despite the fact that the distribution is not normal (the proposed mean is nowhere near the median fo the range provided), because there are sufficiently many entries in the population, the central limit theorem allows us to test the hypothesis about the value of the population mean consumption.

(b) No, it does not.

3.

4. (a) The relevant test statistic in this case would be testing for proportion. Consider the following hypothesis:

$$H_0 : \hat{p} = p_0$$

$$H_a : p_0 > \frac{1}{75} \text{ or } \frac{1}{75} < -\hat{p}$$

It can be concluded that the rate of teh chromosome defect in question differs from the presumed rate. A Type 1 Error could have been made when arriving at the conclusion.

(b) The pnorm calculated came out to be 0.089. So, it would have been rejected at a significance level of 0.2.

5. Since the calculated zscore was 0.74 and the associated pnorm was 0.77, both of which are greater than the expected proportion, 0.10, it cna be concluded that more than 10% of the population has abstained from alcohol use.