A.P. Statistics
Assignment 7.6

Remember to show your thinking through your work.

1)   The P-value for a two-sided test of the null hypothesis H_0: $\mu = 10$ is 0.06.
   (a)   Does the 95% confidence interval include the value 10? Why?

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   (b)   Does the 90% confidence interval include the value 10? Why?

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2)   A 95% confidence interval for a population mean is (28, 35).
   (a)   Can you reject the null hypothesis that $\mu = 34$ at the 5% significance level?
         Why?

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   (b)   Can you reject the null hypothesis that $\mu = 36$ at the 5% significance level?
         Why?

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3)   An understanding of cockroach biology may lead to an effective control strategy for
     these annoying insects. Researchers studying the absorption of sugar by insects feed
     cockroaches a diet containing measured amounts of a particular sugar. After 10
     hours, the cockroaches are killed and the concentration of the sugar in various body
     parts is determined by a chemical analysis. The paper that reports the research states
     that a 95% confidence interval for the mean amount (in milligrams) of the sugar in
     the hindguts of the cockroaches is 4.2 ± 2.3.
   (a)   Does this paper give evidence that the mean amount of sugar in the hindguts
         under these conditions is not equal to 7 mg? State H_0 and H_a and base a test on
         the confidence interval.

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   (b)   Would the hypothesis that $\mu = 5$ mg be rejected at the 5% level in favor of a
         two-sided alternative?

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