Question 27

The weights of a sample of 20 clients at a slimming clinic have sample mean $\bar{x} = 85\,\text{kg}$ and sample standard deviation $s = 11\,\text{kg}$. Assuming that the distribution of weights of clients is normal, find an approximate 95% confidence interval for their overall mean weight. [2]

$(\mu_-, \mu_+) = \left(\bar{x} - \frac{ts}{\sqrt{n}}, \bar{x} + \frac{ts}{\sqrt{n}}\right)$

$= \left(85 - \frac{2.093 \times 11}{\sqrt{20}}, 85 + \frac{2.093 \times 11}{\sqrt{20}}\right)$

$= (79.85, 90.15)$

Question 28

A researcher wants to find an approximate 90% confidence interval for the mean of a population from which a sample of 200 observations has been drawn, but does not have any reasonable theoretical model for the distribution from which the observations may have arisen. What statistical results or concepts would be useful here and what formula will they lead to? [2]

Assume no distribution

$(\mu_-, \mu_+) = \left(\bar{x} - \frac{2s}{\sqrt{n}}, \bar{x} + \frac{2s}{\sqrt{n}}\right)$

$= ($

Question 29

A test of the hypothesis that a casino die was fair produced a SP of 0.42. The investigator concluded that the hypothesis was correct. Comment on this conclusion and, if you disagree with it, say what the conclusion of the test should have been. [2]

There is no reason to reject the hypothesis.
There is insufficient evidence to reject the hypothesis.