

Question 14**(6 marks)**

The annual incomes (in thousands of dollars) of a random sample of n Australians is taken. The sample standard deviation is 10.98. A 99% confidence interval I_1 based on this sample is $90 \leq \mu \leq 94$.

- (a) Calculate the value of the sample size n . (2 marks)

Another random sample of size n is taken and a 99% confidence interval I_2 is calculated.

- (b) State **two** aspects in which the intervals I_1 and I_2 may be different. (2 marks)

A third random sample of size 50 is taken and a 99% confidence interval I_3 is calculated. James suggests that since interval I_3 is the widest, it is more likely to contain the population mean Australian income μ .

(c) Is James correct? Justify your answer.

(2 marks)