3. The random variable X is normally distributed with unknown mean μ and known variance σ^2

A random sample of 25 observations of X produced a 95% confidence interval for μ of (26.624, 28.976)

(a) Find the mean of the sample.

(1)

(b) Show that the standard deviation is 3

(3)

The a % confidence interval using the 25 observations has a width of 2.1

(c) Calculate the value of a

(6)

(d) Find the smallest sample size, of observations from X, that would be required to obtain a 95% confidence interval of width at most 1.5

(4)

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Question 3 continued

(Total for Question 3 is 14 marks)