3. A machine produces packets of cereal with weights, Xkg, such that $X \sim N(\mu, \sigma^2)$

A random sample of these packets is taken and a 95% confidence interval for μ is found to be (509.1572, 510.8428)

(a) Find a 90% confidence interval for μ based on the same sample of packets.
You must show your working and give your confidence limits to one decimal place.

(6)

Using three different random samples, three 90% confidence intervals are to be found.

(b) Calculate the probability that at least 1 of these intervals will contain μ

(2)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 3 continued

(Total for Question 3 is 8 marks)