4 The masses of a certain species of animal are known to be normally distributed with standard deviation σ kg. A researcher obtains the masses of a random sample of n animals of this species and uses these masses to find two confidence intervals (α% and 90%) for the population mean. The width of the α% confidence interval is $1.414 \times$ the width of the 90% confidence interval.

(a) Find α. [3]

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(b) Find the probability that the 90% confidence interval contains the population mean given that the α% confidence interval contains the population mean. [1]

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