Exam Questions - Confidence Intervals

1 Normal mean

A woodwork teacher measures the width, w mm, of a board. The measured width, x mm, is normally distributed with mean w mm and standard deviation 0.5 mm.
The same board is measured 16 times and the results are recorded.
Given that the mean of these 16 measurements is 35.6 mm,
find a 98% confidence interval for w. Find the standard error

$$\text{Standard error} = \frac{\sigma}{\sqrt{n}} = \frac{0.5}{\sqrt{16}} = \frac{1}{8}$$

Find the z greater value for 1%

$$P(Z > 2.3263) = 0.01$$

Substitute in the values

$$\overline{x} \pm z \times \text{Standard error}$$

$$35.6 \pm 2.3263 \times \frac{1}{8}$$