3 The time, T minutes, for a certain daily bus journey is normally distributed. The bus company claims that the mean of T is 45. A passenger believes that the mean of T is actually greater than 45. She notes the times taken for this journey on a random sample of 60 days. The results are summarised below.

$$n = 60 \qquad \Sigma t = 2750 \qquad \Sigma t^2 = 127000$$

(a) Calculate unbiased estimates of the population mean and variance. [3]

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(b) Test the passenger's belief at the 5% significance level. [5]

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