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3. A task was designed to take a person 25 minutes to complete. The random variable T represents the time, in minutes, it takes to complete the task and is uniformly distributed over the interval $[25 - k, 25 + 3k]$ where $k > 0$

(a) Find $P(25 - 0.5k < T < 25 + 2.5k)$

(1)

Given that $E(T^2) = 918.76$

(b) find the value of k.

(6)

The task is to be completed by 50 people. Assuming that people complete the task independently,

(c) calculate the probability that at least 20 of these people complete the task in less than 25 minutes.

(3)

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Question 3 continued

(Total 10 marks)

Q3