7 The time, in minutes, taken by students to complete a test is modelled by the random variable X with probability density function

$$f(x) = \begin{cases} -\frac{3}{4}(x-3)(x-5) & 3 \leqslant x \leqslant 5, \\ 0 & \text{otherwise.} \end{cases}$$

(a) Find the probability that a randomly chosen student takes longer than 4.5 minutes to complete the test. [4]

(b) Write down the median of X. [1]

(c) Without performing an integration, use your answer to part **(a)** to find $P(3.5 < X < 4.5)$. [2]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.