

**AQA – Continuous random variables – A2 Further Mathematics Statistics****1. June/2021/Paper\_7367/3S/No.5**

The continuous random variable  $X$  has cumulative distribution function

$$F(x) = \begin{cases} 0 & x \leq 1 \\ \frac{1}{10}x - \frac{1}{10} & 1 < x \leq 6 \\ \frac{1}{90}x^2 + \frac{1}{10} & 6 < x \leq 9 \\ 1 & x > 9 \end{cases}$$

(a) Find the probability density function  $f(x)$

[2 marks]

(b) Show that  $\text{Var}(X) = \frac{6737}{1200}$

[4 marks]