Exponential distributions – A2 Further Mathematics Statistics

1. June/2022/Paper_7367/03S/No.3

The random variable X has an exponential distribution with probability density function
$f(x) = \lambda e^{-\lambda x}$ where $x \geq 0$

(a) Show that the cumulative distribution function, for $x \geq 0$, is given by $F(x) = 1 - e^{-\lambda x}$

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

(b) Given that $\lambda = 2$, find $P(X > 1)$, giving your answer to three decimal places.

[2 marks]

_____

_____

_____

_____

_____

_____

_____