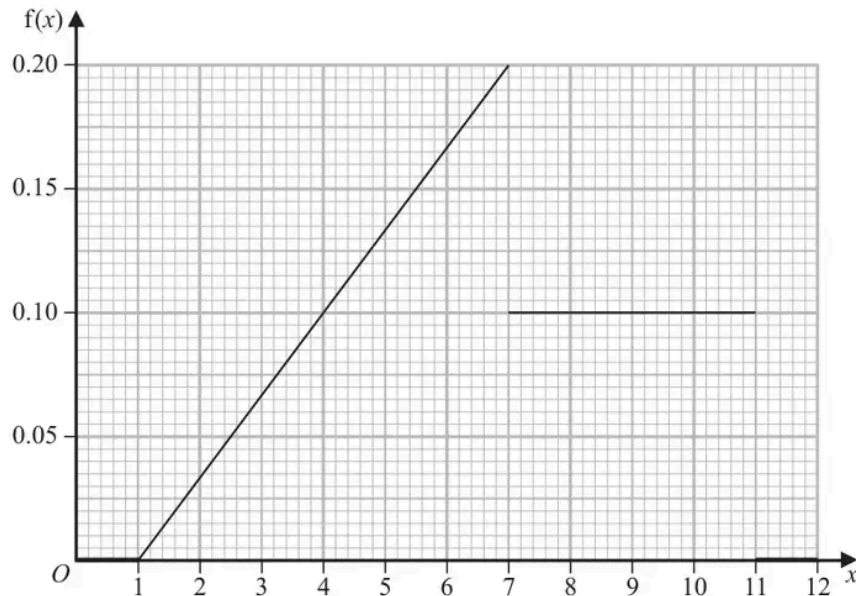


QQQ – Further Statistics 2 – Chapter 3 – Continuous Distributions (Version 1)

Total Marks: 24

(24 = Platinum, 22 = Gold, 19 = Silver, 16 = Bronze)

1. The graph shows the probability density function $f(x)$ of the continuous random variable X



- (a) Find $P(X < 4)$ (2)
- (b) Specify the cumulative distribution function of X for $7 \leq x \leq 11$ (3)

(Total 5 marks)

Edexcel AS June 2022 Q2

2. The random variable R has a continuous uniform distribution over the interval $[5, 9]$

- (a) Specify fully the probability density function of R . (1)
- (b) Find $P(7 < R < 10)$ (1)

The random variable A is the area of a circle radius R cm.

- (c) Find $E(A)$ (4)

(Total 6 marks)

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3. A rectangle has a perimeter of 20 cm. The length, X cm, of one side of this rectangle is uniformly distributed between 1 cm and 7 cm.

Find the probability that the length of the longer side of the rectangle is more than 6 cm long.

(5)

(Total 5 marks)

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4. The continuous random variable X has cumulative distribution function given by

$$F(x) = \begin{cases} 0 & x \leq 0 \\ k \left(x^3 - \frac{3}{8}x^4 \right) & 0 < x \leq 2 \\ 1 & x > 2 \end{cases}$$

where k is a constant.

(a) Show that $k = \frac{1}{2}$ **(1)**

(b) Showing your working clearly, use calculus to find

(i) $E(X)$

(ii) the mode of X

(6)

(c) Describe, giving a reason, the skewness of the distribution of X **(1)**

(Total 8 marks)

Edexcel A2 June 2019 Q4