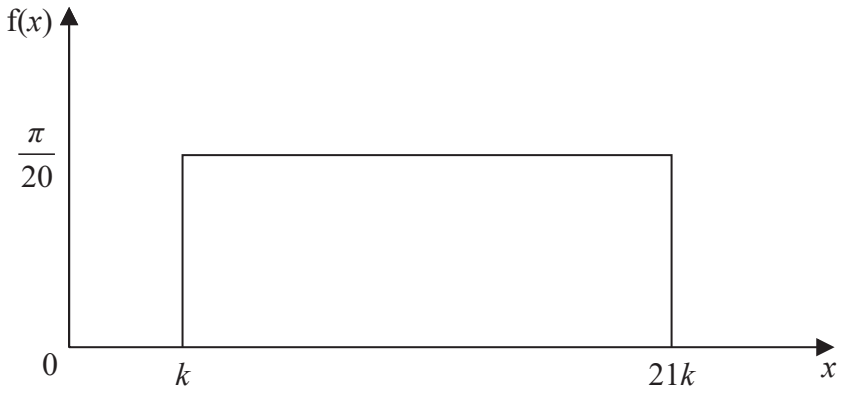
4. The continuous random variable X has probability density function f(x), shown in the diagram, where k is a constant.



(a) Find $P(X < 10k)$

(1)

(b) Show that $k = \frac{1}{\pi}$

(2)

(c) Find, in terms of π, the values of

(i) E(X)

(ii) Var(X)

(3)

Circles are drawn with area A, where

$$A = \pi\left(X + \frac{2}{\pi}\right)^2$$

(d) Find E(A)

(4)

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Question 4 continued

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Question 4 continued

(Total for Question 4 is 10 marks)

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