

10 The function h is defined by

$$h(x) = \frac{\sqrt{x}}{x-3}$$

where h has its maximum possible domain.

10 (a) Find the domain of h .

Give your answer using set notation.

[3 marks]

10 (b) Alice correctly calculates

$$h(1) = -0.5 \quad \text{and} \quad h(4) = 2$$

She then argues that since there is a change of sign there must be a value of x in the interval $1 < x < 4$ that gives $h(x) = 0$

Explain the error in Alice's argument.

[2 marks]

10 (c) By considering any turning points of h , determine whether h has an inverse function.

Fully justify your answer.

[6 marks]