

10 The function f is defined by

$$f(x) = 4 + 3^{-x}, \quad x \in \mathbb{R}$$

10 (a) Using set notation, state the range of f

[2 marks]

10 (b) The inverse of f is f^{-1}

10 (b) (i) Using set notation, state the domain of f^{-1}

[1 mark]

10 (b) (ii) Find an expression for $f^{-1}(x)$

[3 marks]

10 (c) The function g is defined by

$$g(x) = 5 - \sqrt{x}, \quad (x \in \mathbb{R} : x > 0)$$

10 (c) (i) Find an expression for $gf(x)$

[1 mark]

10 (c) (ii) Solve the equation $gf(x) = 2$, giving your answer in an exact form.

[3 marks]