

- 12 Functions f and g are defined by
- $$f(x) = x^2 + 5 \quad x \in \mathbb{R}$$
- $$g(x) = \sqrt{x} \quad x \geq 0$$

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

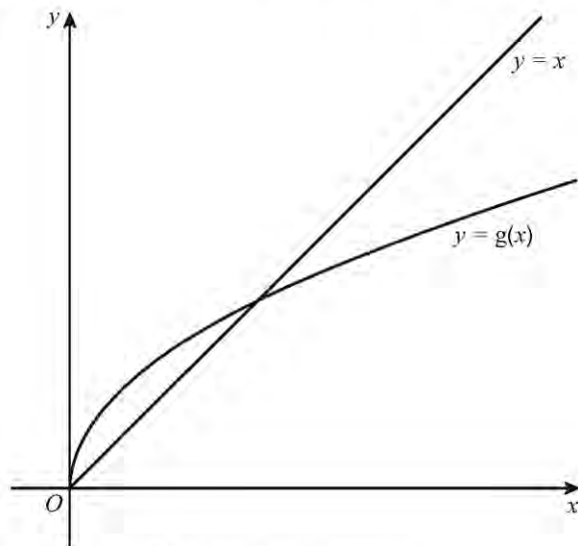
[2 marks]

12 (b) Determine whether f has an inverse.

Fully justify your answer.

[2 marks]

12 (c) The graph of $y = g(x)$, and the line with equation $y = x$, are shown on the diagram below.



Sketch the graph of $y = g^{-1}(x)$ on the diagram.

[2 marks]

12 (d) The composite function gf is denoted by h

12 (d) (i) Write down an expression for $h(x)$

[1 mark]

12 (d) (ii) State the range of h

[1 mark]