4 The function f is defined as follows:

$$\mathrm{f}(x) = \sqrt{x} - 1 \text{ for } x > 1.$$

(a) Find an expression for $\mathrm{f}^{-1}(x)$. [1]

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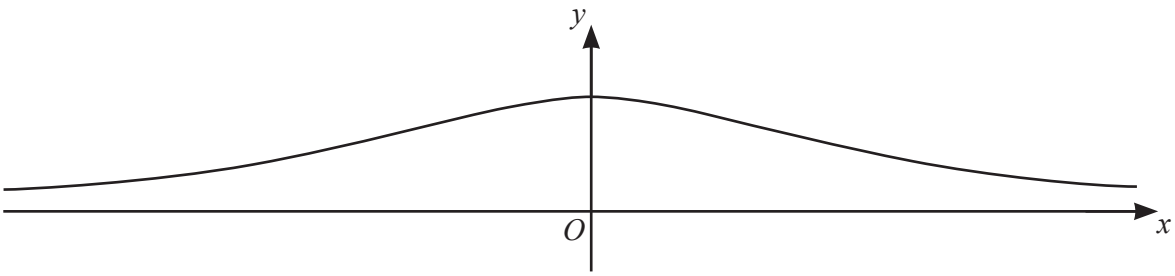

The diagram shows the graph of $y = \mathrm{g}(x)$ where $\mathrm{g}(x) = \dfrac{1}{x^2 + 2}$ for $x \in \mathbb{R}$.

(b) State the range of g and explain whether g^{-1} exists. [2]

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The function h is defined by $\mathrm{h}(x) = \dfrac{1}{x^2+2}$ for $x \geqslant 0$.

(c) Solve the equation $\mathrm{hf}(x) = \mathrm{f}\left(\dfrac{25}{16}\right)$. Give your answer in the form $a + b\sqrt{c}$, where a, b and c are integers. [4]