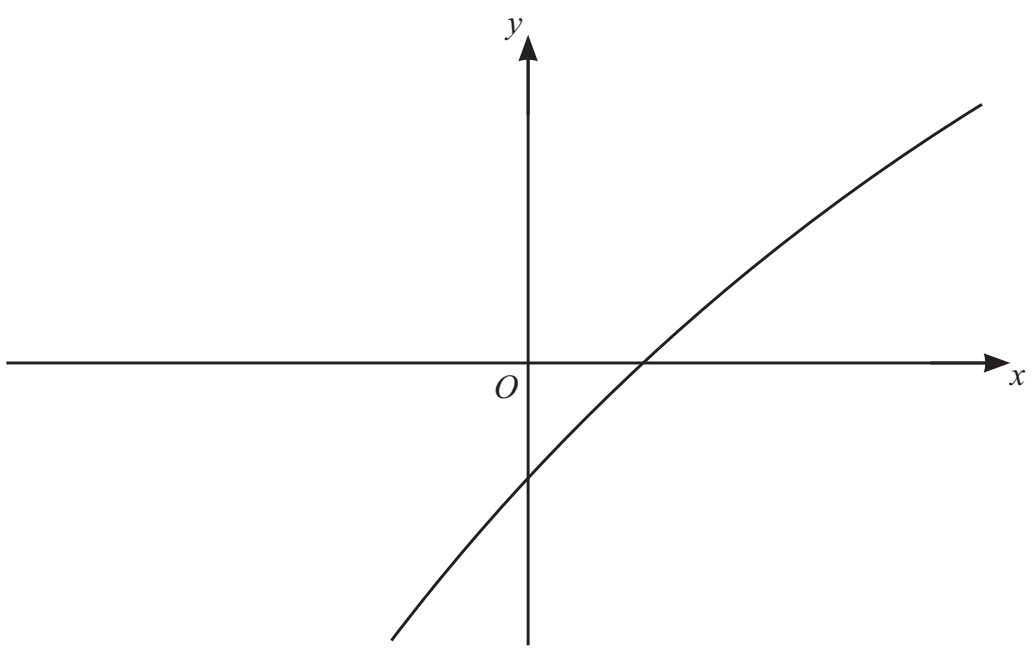
10 The functions f and g are defined by

$$f(x) = \sqrt{x} \qquad \text{for } x \geqslant 0,$$

$$g(x) = 3\sqrt{x+2} - 5 \qquad \text{for } x \geqslant -2.$$

(a) Describe fully a sequence of transformations which transforms the graph of $y = f(x)$ to the graph of $y = g(x)$. You should make clear the order in which the transformations are applied. [5]



The diagram shows the graph of $y = g(x)$.

(c) Find an expression for $g^{-1}(x)$. [2]

(d) State the range of g^{-1}. [1]

The function h is defined by

$$h(x) = x - 2 \qquad \text{for } x \geqslant 0.$$

(e) Find the value of $g^{-1}h(4)$. [1]

(f) Explain why the composite function hg^{-1} cannot be formed. [1]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.