



The diagram shows the function f defined for $0 \leq x \leq 6$ by

$$\begin{aligned} x &\mapsto \frac{1}{2}x^2 && \text{for } 0 \leq x \leq 2, \\ x &\mapsto \frac{1}{2}x + 1 && \text{for } 2 < x \leq 6. \end{aligned}$$

- (i) State the range of f . [1]
- (ii) Copy the diagram and on your copy sketch the graph of $y = f^{-1}(x)$. [2]
- (iii) Obtain expressions to define $f^{-1}(x)$, giving the set of values of x for which each expression is valid. [4]