

- 9**      **(i)** Express  $-x^2 + 6x - 5$  in the form  $a(x + b)^2 + c$ , where  $a$ ,  $b$  and  $c$  are constants. [3]

The function  $f : x \mapsto -x^2 + 6x - 5$  is defined for  $x \geq m$ , where  $m$  is a constant.

- (ii)** State the smallest value of  $m$  for which  $f$  is one-one. [1]
- (iii)** For the case where  $m = 5$ , find an expression for  $f^{-1}(x)$  and state the domain of  $f^{-1}$ . [4]