

**8** The function  $f$  is such that  $f(x) = a^2x^2 - ax + 3b$  for  $x \leq \frac{1}{2a}$ , where  $a$  and  $b$  are constants.

**(i)** For the case where  $f(-2) = 4a^2 - b + 8$  and  $f(-3) = 7a^2 - b + 14$ , find the possible values of  $a$  and  $b$ . [5]

**(ii)** For the case where  $a = 1$  and  $b = -1$ , find an expression for  $f^{-1}(x)$  and give the domain of  $f^{-1}$ . [5]