10 The function f is such that $f(x) = 2x + 3$ for $x \geqslant 0$. The function g is such that $g(x) = ax^2 + b$ for $x \leqslant q$, where a, b and q are constants. The function fg is such that $fg(x) = 6x^2 - 21$ for $x \leqslant q$.

   (i) Find the values of a and b.   [3]

   (ii) Find the greatest possible value of q.   [2]

It is now given that $q = -3$.

   (iii) Find the range of fg.   [1]

   (iv) Find an expression for $(fg)^{-1}(x)$ and state the domain of $(fg)^{-1}$.   [3]