11 **(i)** Express $2x^2 - 12x + 11$ in the form $a(x+b)^2 + c$, where a, b and c are constants. [3]

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The function f is defined by $f(x) = 2x^2 - 12x + 11$ for $x \leqslant k$.

(ii) State the largest value of the constant k for which f is a one-one function. [1]

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(iii) For this value of k find an expression for $f^{-1}(x)$ and state the domain of f^{-1}. [4]

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The function g is defined by $g(x) = x + 3$ for $x \leqslant p$.

(iv) With k now taking the value 1, find the largest value of the constant p which allows the composite function fg to be formed, and find an expression for fg(x) whenever this composite function exists. [3]

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