9 The functions f and g are defined by

$$\mathrm{f}(x) = x^2 - 4x + 3 \quad \text{for } x > c, \text{ where } c \text{ is a constant,}$$

$$\mathrm{g}(x) = \frac{1}{x+1} \quad \text{for } x > -1.$$

(a) Express $\mathrm{f}(x)$ in the form $(x-a)^2 + b$. [2]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

It is given that f is a one-one function.

(b) State the smallest possible value of c. [1]

.....

.....

.....

.....

.....

.....

.....

.....

It is now given that $c = 5$.

(c) Find an expression for $\mathrm{f}^{-1}(x)$ and state the domain of f^{-1}. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(d) Find an expression for $\mathrm{gf}(x)$ and state the range of gf. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....