

Functions f and g are defined as follows:

$$f : x \mapsto x^2 + 2x + 3 \text{ for } x \leq -1,$$

$$g : x \mapsto 2x + 1 \text{ for } x \geq -1.$$

(a) Express $f(x)$ in the form $(x + a)^2 + b$ and state the range of f .

[3]

[illegible]

(b) Find an expression for $f^{-1}(x)$. [2]

[2]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

(c) Solve the equation $gf(x) = 13$. [3]

[3]

[illegible]