

8 Functions f and g are defined by

$$f(x) = (x + a)^2 - a \text{ for } x \leq -a,$$

$$g(x) = 2x - 1 \text{ for } x \in \mathbb{R},$$

where a is a positive constant.

(a) Find an expression for $f^{-1}(x)$. [3]

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(b) **(i)** State the domain of the function f^{-1} . [1]

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(ii) State the range of the function f^{-1} . [1]

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(c) Given that $a = \frac{7}{2}$, solve the equation $gf(x) = 0$. [3]

[3]