Exercise 1

Paper 1 style · No calculator

1 6 marks SL 2.5 ●○○ Routine

Let $f(x) = 3x + 1$ and $g(x) = x^2 - 2$.

(a) Find $(f \circ g)(2)$. **[2]**

(b) Find $(g \circ f)(x)$. Give your answer in the form $ax^2 + bx + c$. **[2]**

(c) Solve $(f \circ g)(x) = 7$. **[2]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
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MARKSCHEME (a)

$g(2) = 2$ **(A1)**

$f(2) = 7$ **A1**

Total 2 marks

MARKSCHEME (b)

$(3x + 1)^2 - 2$ **(M1)**

$9x^2 + 6x - 1$ **A1**

Total 2 marks

MARKSCHEME (c)

$3\left(x^2 - 2\right) + 1 = 7,\ x^2 = 4$ **(M1)**

$x = \pm 2$ **A1**

Total 2 marks