

**Composite Functions, Domain and Range, Inverse Functions** 

1. Let  $f(x) = 2\sqrt{3x+1}$  for  $x \ge 0$  and g(x) = 4x - 5 for  $x \in \mathbb{R}$ .

(a) Write down $f(5)$	(1 mark)
(b) Find $g \circ f$ (5)	(2 marks)
(c) Find $g^{-1}(x)$	(3 marks)

## Mark scheme:

(a) $f(5) = 8$	(A1)
(b) $g \circ f(5) = 4(8) - 5$	(M1)
$g \circ f(5) = 27$	(A1)
(c) $x = 4y - 5$	(M1) Switching x and y
x + 5 = 4y	(A1) Evidence of correct manipulating
$g^{-1}(x) = \frac{x+5}{4}$	(A1)