

COMPOSITE & INVERSE FUNCTIONS

SET 1

1 State the ranges of each of these functions:

(a) $f(x) = 3x - 3$ $x \in \{-2, -1, 0, 1, 2\}$

(b) $g(x) = x^2 - 4x$ $0 \leq x \leq 4$

(c) $c(x) = 3\cos 2x + 1$ $x \in R$

2 Find the largest possible domain for the function $V(x) = \sqrt{3-x}$, and state the corresponding range.

3 Sketch the graph of the function $L(x) = \begin{cases} 2x-8 & 0 \leq x \leq 4 \\ x-4 & x \geq 4 \end{cases}$

4 $f(x) = 2x^2$ and $g(x) = 4 - 2x$

(a) Find formulae for $f(g(x))$ and $g(f(x))$.

(b) Hence calculate: (i) $g(f(0))$ (ii) $f(g(3))$ (iii) $g(g(-2))$.

5 Find formulae for the inverses of these functions:

(a) $f(x) = \frac{1}{2}x - 2$

(b) $g(x) = \frac{2}{x-1}, x \neq 1$.

6 Sketch the inverse of the following function, $f(x) = x^3 + 1$:

