

## Worksheet 2 - Section 1.3

(1) Sketch the graph of the function  $f(x) = x^2 + 6x + 10$ .

(2) Sketch the following functions.

(a)  $y = 1 - \sin x$

(b)  $y = |x^2 - 1|$

(c)  $y = \frac{1}{x+2}$

(d)  $y = 1 - 2\sqrt{x+3}$

(3) Find the composite function in each of the following cases.

(a)  $f(x) = x^2$        $g(x) = x - 3$        $f \circ g$  and  $g \circ f$

(b)  $f(x) = \sqrt{x}$        $g(x) = \sqrt{2-x}$        $f \circ g$ ,  $g \circ f$ ,  $f \circ f$  and  $g \circ g$

(4) Find  $f \circ g \circ h$  if  $f(x) = \frac{x}{x+1}$ ,  $g(x) = x^{10}$  and  $h(x) = x + 3$ .

(5) Given  $F(x) = \cos^2(x + 9)$ .

Find functions  $f$ ,  $g$  and  $h$  such that  $F = f \circ g \circ h$ .