

Higher Homework 4 – Functions

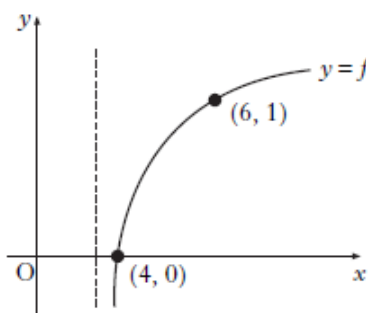
1. (a) Express $2x^2 + 8x + 3$ in the form $a(x + p)^2 + q$ 3
 (b) Hence or otherwise state the coordinates of the turning point 1

2. The functions f and g , defined on suitable domains, are given by

$$f(x) = \frac{1}{x^2} \quad \text{and} \quad g(x) = 2x - 1$$

- (a) Find an expression for $h(x) = f(g(x))$ 3
 (b) State a suitable domain for the function $h(x)$ 1
 (c) Determine an expression for the inverse function $g^{-1}(x)$ 1

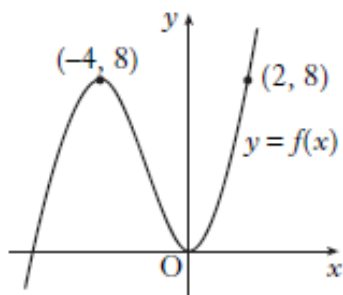
3. The diagram shows the graph of a log function $y = \log_a(x + b)$



Determine the values of a and b 2

4. Sketch the graph of $y = 3\cos(x - 45)^\circ$ for $0 \leq x \leq 360^\circ$
 Mark clearly the graph's minimum and maximum turning points
and where it cuts the x-axis 4

5. The diagram shows the graph of function $y = f(x)$



Sketch

- (a) $y = f(2x)$
 (b) $y = 1 - f(2x)$

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