

IB SL MATHEMATICS

REVIEW 6

NAME: _____

DATE: _____

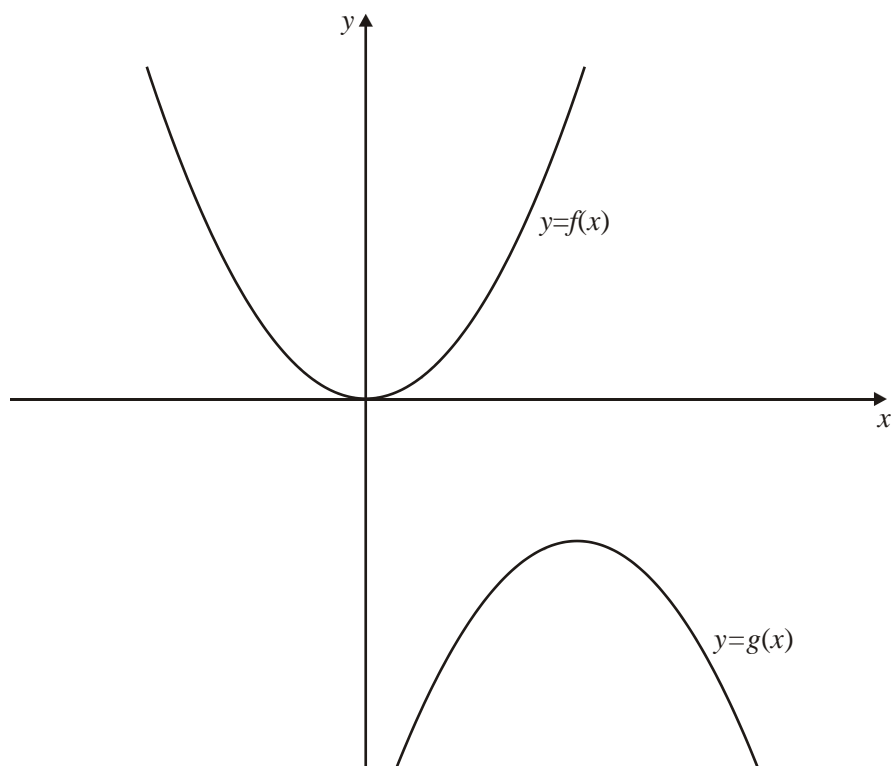
1. Given $f(x) = x^2 + x(2 - k) + k^2$, find the range of values of k for which $f(x) > 0$ for all real values of x .

(Total 4 marks)

2. Find the largest domain for the function $f: x \mapsto \frac{1}{\sqrt{4 - 9x^2}}$.

(Total 4 marks)

3. The diagram shows a sketch of part of the graph of $f(x) = x^2$ and a sketch of part of the graph of $g(x) = -x^2 + 6x - 13$



- (a) Write down the coordinates of the maximum point of $y = g(x)$.

The graph of $y = g(x)$ can be obtained from the graph of $y = f(x)$ by **first** reflecting the graph of $y = f(x)$, **then** translating the graph of $y = f(x)$.

- (b) Describe fully each of these transformations, which together map the graph of $y = f(x)$ onto the graph of $y = g(x)$.

(Total 3 marks)

4. If $f(x) = \frac{x}{x+1}$, for $x \neq -1$ and $g(x) = (f \circ f)(x)$, find

(a) $g(x)$

(b) $(g \circ g)(2)$.

(Total 3 marks)

5. The function $f: x \mapsto \frac{2x+1}{x-1}$, $x \in \mathbb{R}, x \neq 1$. Find the inverse function, f^{-1} , clearly stating its domain.

(Total 3 marks)