Name:	Date:
Question 1: Show that $(x-1)$ is a factor of x^3-6x^2-x+6 and hence factorise it fully.	7·1 Bronze Outcome 1
Question 2: Show that the line y = 5x + 2 does not intersect the parabola with equation $y = x^2 + 2x + 9$.	8·5 Gold Outcome 3
Question 3: Find the coordinates of the stationary points of the curve with equation $y = 2x^3 - 15x^2 + 8$ and determine their nature.	6·5 Bronze Outcome 1 6·5 Silver Outcome 2
Question 4: Show that the line y = x - 1 is a tangent to the circle $x^2 + y^2 - 8x + 6y + 7 = 0$ and find the coordinates of the point of contact.	11·3 Silver Outcome 2
Question 5: Solve $2x^2 + 5x - 3 < 0$.	8·3 Gold Outcome 3
My score:	

Exam Questions

Question 1:

A function, f, is defined on the set of real numbers by $f(x) = x^3 - 7x - 6$.

Determine whether f is increasing or decreasing when $x = 2$. 3

Question 2:

Functions f and g are defined on suitable domains by $f(x) = \sin(x^\circ)$ and $g(x) = 2x$.

(a) Find expressions for:

(i) $f(g(x))$;

(ii) $g(f(x))$. 2

(b) Solve $2f(g(x)) = g(f(x))$ for $0 \le x \le 360$. 5

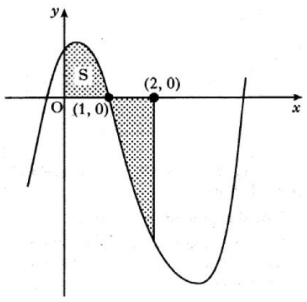
Question 3:

The graph shown has equation $y = x^3 - 6x^2 + 4x + 1$.

The total shaded area is bounded by the curve, the x-axis, the y-axis and the line $x = 2$.

(a) Calculate the shaded area labelled S. 4

(b) Hence find the total shaded area. 3



My score: