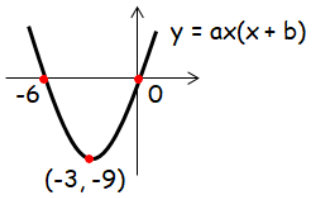
Name:	Date:
Question 1: For what values of x is the function $y = x^2 + 12x - 19$ decreasing?	6·4 Bronze Outcome 1
Question 2: Find the value(s) of m. $\int_1^a 4x + 3\,dx = 30$	9·2 Gold Outcome 3
Question 3: Show that the line y = 2x - 1 does not intersect the circle with equation $x^2 + y^2 + 2x - y + 8 = 0$.	11·3 Gold Outcome 3
Question 4: The equation of the parabola shown is of the form y = kx(x + a).  What is the equation of this quadratic?	8·1 Bronze Outcome 1
Question 5: Given that $x = 3$ and $x = -4$ are roots of $f(x) = x^3 + ax^2 - 10x + b$, find the values of a and b and hence factorise fully.	7·2 Gold Outcome 3
My score:	

Exam Questions

Question 1:

Functions f and g are defined on the set of real numbers by

- $f(x) = x^2 + 3$
- $g(x) = x + 4$.

(a) Find expressions for:

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

(ii) $g(f(x))$. 3

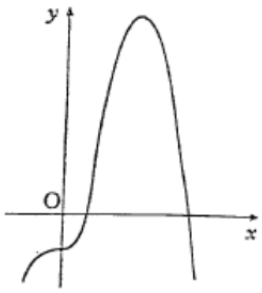
(b) Show that $f(g(x)) + g(f(x)) = 0$ has no real roots. 3

Question 2:

Solve the equation
$\sin 2x° = 6\cos x°$ for
$0 \leq x \leq 360$. 4

Question 3:

A curve has equation $y = -x^4 + 4x^3 - 2$. An incomplete sketch of the graph is shown in the diagram.



(a) Find the coordinates of the stationary points. (6)

(b) Determine the nature of the stationary points. (2)

My score: