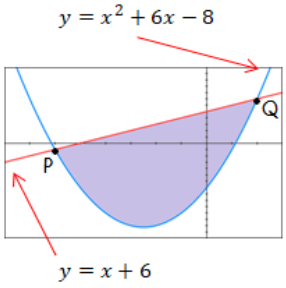
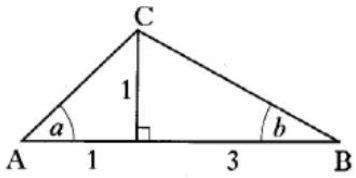
Name:	Date:
Question 1: Find the range of values of k such that the equation $25x^2 + 5x - k = 0$ has no real roots.	8·4 Silver Outcome 2
Question 2: A curve for which $\frac{dy}{dx} = 3x^2 + 4$ passes through the point (-1, 5). Express y in terms of x.	9·3 Outcome 1
Question 3: Sketch the graph of $y = x^3 - 3x^2$ showing clearly where it meets the x and y axes.	6·5 Gold Outcome 3
Question 4: Show that the circles $x^2 + y^2 + 4x + 10y - 8 = 0$ and $(x + 1)^2 + (y - 6)^2 = 38$ intersect at two points.	11·4 Bronze Outcome 1
Question 5: The curve $y = x^2 + 6x - 8$ and the line $y = x + 6$ intersect at points P and Q. Calculate the area enclosed by the line and the curve. 	9·4 Silver Outcome 2
My score:	

Exam Questions

Question 1:

In triangle ABC, show that the exact value of $\sin(a+b)$ is $\frac{2}{\sqrt{5}}$.



4

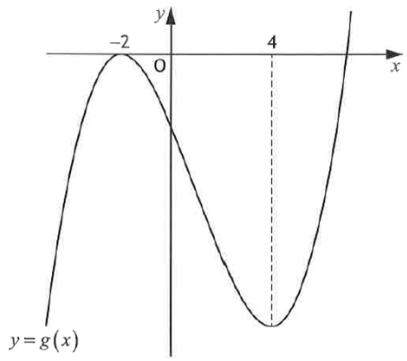
Question 2:

Find the equation of the tangent at the point (3, 1) on the circle

$$x^2 + y^2 - 4x + 6y - 4 = 0$$ 5

Question 3:

The diagram below shows the graph of a cubic function $y = g(x)$, with stationary points at $x = -2$ and $x = 4$.



On the diagram in your answer booklet, sketch the graph of $y = g'(x)$. 2

My score: