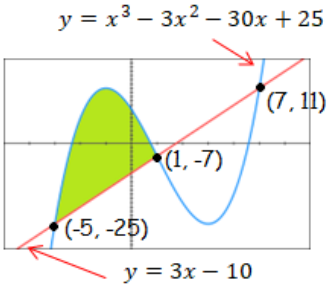
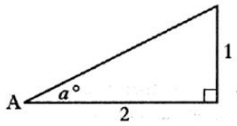
Name:	Date:
Question 1: Simplify the following logarithmic expression. $2\log_{16} 6 - \log_{16} 9$	14·1 Gold Outcome 3
Question 2: Calculate the following. $\int \frac{x+1}{\sqrt[6]{x}}\, dx$	9·1 Gold Outcome 3
Question 3: Show that the line y – x + 2 = 0 is a tangent to the circle $x^2 + y^2 - 4x - 8y + 12 = 0$ and find the coordinates of the point of contact.	11·3 Silver Outcome 2
Question 1: The curve $y = x^3 - 3x^2 - 30x + 25$ intersects the line y = 3x – 10 at points (-5, -25), (1, -7) and (7, 11).  Calculate the shaded area.	9·4 Silver Outcome 2
Question 5: The equation $x^2 + kx + 2k - 10 = 2x - 3$ has equal roots. Find the values of k.	8·4 Gold Outcome 3
My score:	

Exam Questions

Question 1:

The diagram shows a right-angled triangle with height 1 unit, base 2 units and an angle of $a°$ at A.



(a) Find the exact values of:

(i) $\sin a°$;

(ii) $\sin 2a°$. 4

(b) By expressing $\sin 3a°$ as $\sin(2a + a)°$, find the exact value of $\sin 3a°$. 4

Question 2:

Given that

$f(x) = \sqrt{x} + \frac{2}{x^2}$, find $f'(4)$. 5

Question 3:

(a) $12\cos x° - 5\sin x°$ can be expressed in the form $k\cos(x + a)°$, where $k > 0$ and $0 \leq a < 360$.

Calculate the values of k and a. 4

(b) (i) Hence state the maximum and minimum values of $12\cos x° - 5\sin x°$.

(ii) Determine the values of x, in the interval $0 \leq x < 360$, at which these maximum and minimum values occur. 3

My score: