Name:	Date:
Question 1: Find the centre and radius of the circle with equation $(x-5)^2 + (y+3)^2 = 16$	11·1 Bronze Outcome 1
Question 2: Solve $12 + x - x^2 > 0$ .	8·3 Silver Outcome 2
Question 3: Find the value(s) of m. $\int_{3}^{m} 8 - 2x  dx = 7$	9.2 Gold Outcome 3
Question 4: Find the equation of the straight line which is perpendicular to the line with equation $8y = x + 10$ and which passes through the point $(7, 3)$ .	1.6 Silver Outcome 2
Question 5: For what values of x is the function $y = \frac{1}{3}x^3 - 2x^2 - 32x$ increasing?	6·4 Bronze Outcome 1
My score:	

## Exam Questions



Question 1:

If  $x^{\circ}$  is an acute angle such that  $\tan x^{\circ} = \frac{4}{3}$ , show that the exact value of

$$\sin(x+30)^{\circ}$$
 is  $\frac{4\sqrt{3}+3}{10}$ . (3)

Question 2:

Solve the equation

$$\sin x - 2\cos 2x = 1 \quad \text{for } 0 \le x < 2\pi.$$

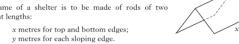
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## Question 3:

A manufacturer is asked to design an open-ended shelter, as shown, subject to the

Condition 1

The frame of a shelter is to be made of rods of two different lengths:



The frame is to be covered by a rectangular sheet of material.

The total area of the sheet is 24 m<sup>2</sup>.

(a) Show that the total length, L metres, of the rods used in a shelter is given by

$$L = 3x + \frac{48}{x}$$
.

(b) These rods cost £8.25 per metre.

To minimise production costs, the total length of rods used for a frame should

(i) Find the value of x for which L is a minimum.

## My score: