Name:	Date:
Question 1: A function is given by $h(x) = x^3 - 5$. Find the inverse function $h^{-1}(x)$.	3·3 Outcome 1
Question 2: A function is given as $f(x) = 5x^2 + 3x - 2$. Calculate f'(-2).	6·2 Bronze Outcome 1
Question 3: Express $3x^2 + 12x + 7$ in the form $a(x + b)^2 + c$.	8·2 Bronze Outcome 1
Question 4: Solve $x^2 + 5x + 4 > 0$.	8·3 Silver Outcome 2
Question 5: Show that $(x + 1)$ is a factor of $x^3 + 2x^2 - 11x - 12$ and hence factorise it fully.	7·1 Bronze Outcome 1
My score:	

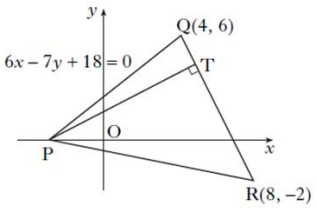
Exam Questions

Question 1:

Triangle PQR has vertex P on the x-axis, as shown in the diagram.

Q and R are the points (4, 6) and (8, –2) respectively.

The equation of PQ is $6x - 7y + 18 = 0$.



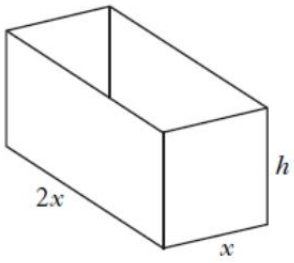
(a) State the coordinates of P. **1**

(b) Find the equation of the altitude of the triangle from P. **3**

(c) The altitude from P meets the line QR at T. Find the coordinates of T. **4**

Question 2:

An open cuboid measures internally x units by $2x$ units by h units and has an inner surface area of 12 units^2.

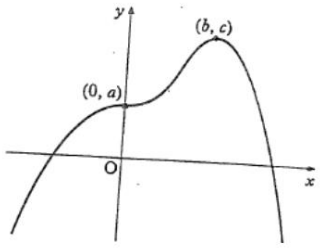


(a) Show that the volume, V units^3, of the cuboid is given by $V(x) = \frac{2}{3}x(6 - x^2)$. **3**

(b) Find the exact value of x for which this volume is a maximum. **5**

Question 3:

The diagram shows a sketch of part of the graph of $y = f(x)$. The graph has a point of inflection at $(0, a)$ and a maximum turning point at (b, c).



sketch the graph of $y = f'(x)$. **(2)**

My score: