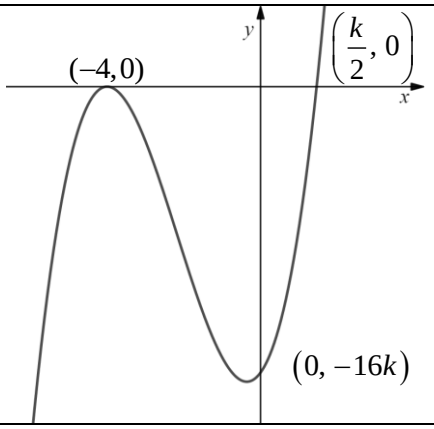
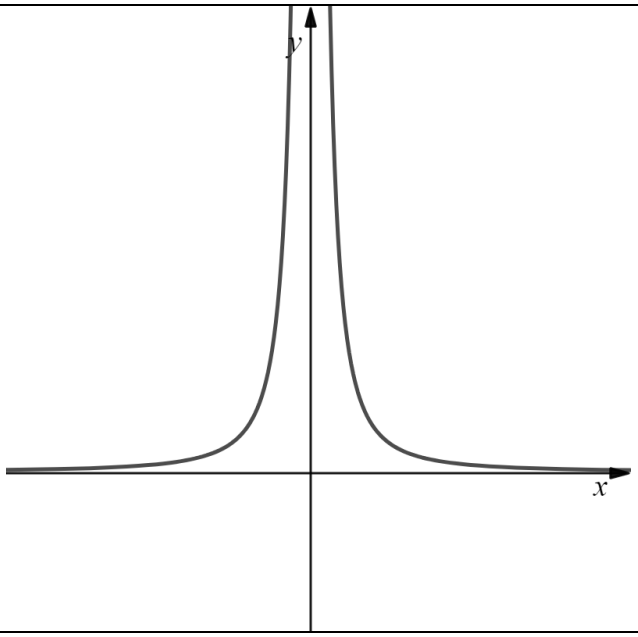
Question Number	Scheme	Marks
6(a)(i)		B1B1B1
		(3)
(a)(ii)		B1B1
		(2)
(b)	One root because the two graphs intersect each other once	B1
		(1)
		(6 marks)

(a)(i) If multiple attempts are made then mark the last attempt. Condone if (i) and (ii) are drawn on the same set of axes

B1 A positive cubic shape with a local maximum and a local minimum drawn anywhere on a set of axes. Do not be concerned regarding the location of the minimum. Mark of the intention to draw a cubic so condone aspects which may appear linear or slips of the pen.

B1 Intersects (not just meet) the *x*-axis at $x = \frac{k}{2}$ to the right of the *y*-axis and has a local maximum (or minimum) on $x = -4$ which must be to the left of the *y*-axis. If there is a contradiction between the labelling on the graph and values stated separately then the graph labels take precedence. Condone for example $(-4, 0)$ labelled as $(0, -4)$ as long as it is in the correct position on the axis

B1 *y*-intercept is $-16k$ (which must be below the *x*-axis) If there is a contradiction between the labelling on the graph and the *y*-intercept stated separately then the graph label takes precedence. Condone for example $(0, -16k)$ labelled as $(-16k, 0)$ as long as it is in the correct position on the axis

(a)(ii)

B1 Correct shaped curve in the first **or** second quadrant. It must not cross either axis. Do not be concerned by any labelled asymptotes or extra "branches" appearing in these quadrants. Mark the intention to draw a graph which does not have a clear turning point.

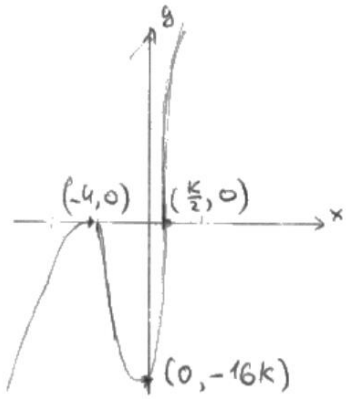
B1 Correct curves in the first **and** second quadrants and no other curves appearing in quadrants 3 and 4 (unless the cubic from (i) has been drawn on the same axes). Mark the intention to draw a graph tending towards the axes and does not have a clear turning point. If any asymptotes are labelled or indicated with dashed lines which are not the coordinate axes then withhold this mark.

(b) This mark can only be awarded provided both graphs are the correct shape and position in part (a) (the intercepts with the axes are not needed for this mark)

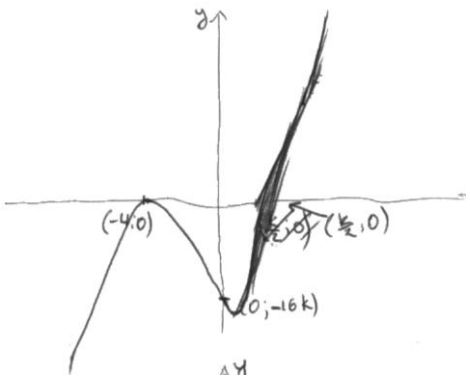
B1 One root because the two graphs intersect each other once (only). Condone alternative wording which implies they "meet" once. Do not allow references to intersecting the axes.

Examples for (a)(i)

B1B1B1

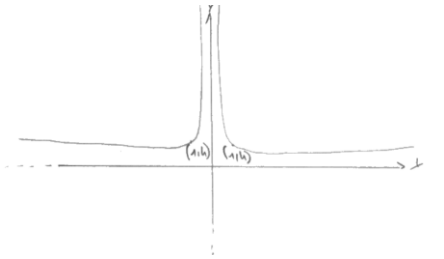


B1B1B1

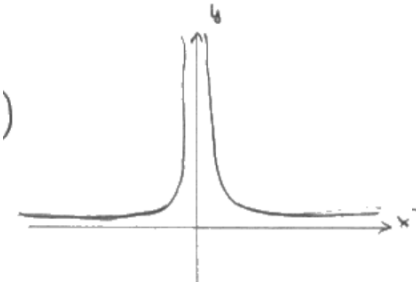


Examples for (a)(ii)

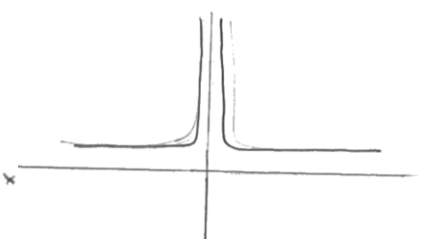
B1B1



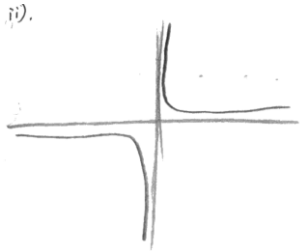
B1B1



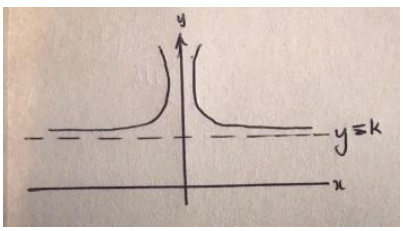
B1B1



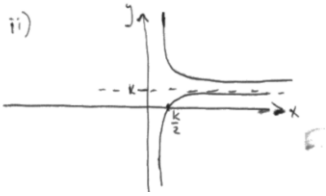
B1B0

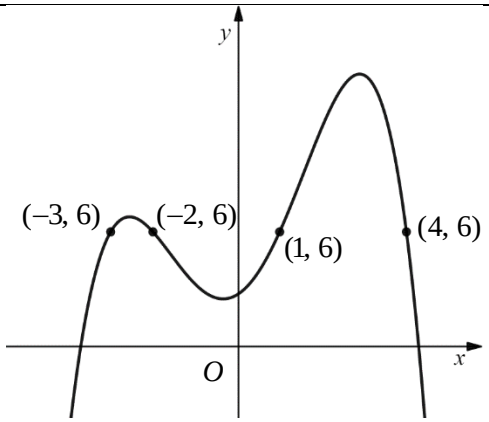


B1B0



B1B0



Question Number	Scheme	Marks
7(a)	$-1 < x < 2$ $x < -4,\ x > 3$	M1A1 B1
		(3)
(b)	$(x =)\ 1.5$	B1
		(1)
(c)(i)		B1B1B1
(ii)	$-3 \text{,,}\ x \text{,,}\ -2$	B1
		(4)
		(8 marks)

(a) Ignore any references to OR or AND (or equivalent use of set notation) between $-1 < x < 2,\ x > 3,\ x < -4$

M1 Requires one end of the inside region between -1 and 2. Score for $x > -1$ or $x < 2$, condoning use of ,, … Must be in terms of x

A1 $-1 < x < 2$ or any equivalent notation such as $-1 < x \cap x < 2$, $(-1,\ 2)$ and also score for $2 > x > -1$. Do not allow just two separate inequalities for this mark without AND or equivalent.

B1 $x > 3,\ x < -4$

(b)

B1 1.5 or $\frac{3}{2}$ Condone $(1.5,\ 6)$ or $x = 1.5,\ y = 6$ only (the y-coordinate must be correct if stated)

(c)(i) Check the figure at the start of the question. If there is a contradiction, then the sketch with labelled coordinates in the main body of working takes precedence. There must be a sketch to score any marks.

B1 Sketch reflected in the y-axis with the intention to have the higher maximum turning point in quadrant 1 and the lower maximum turning point in quadrant 2. Do not be concerned which side of the y-axis the minimum turning point is located.

B1 Either two correct pairs of coordinates **or** all x coordinates correct **or** all y coordinates correct. Do not be concerned with the relative locations of the coordinates in relation to each