Paper Reference(s)

6663/01

Edexcel GCE

Core Mathematics C1
Gold Level G2

Time: 1 hour 30 minutes

Materials required for examination papers	**Items included with question**
Mathematical Formulae (Green)	Nil

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Core Mathematics C1), the paper reference (6663), your surname, initials and signature.

Information for Candidates

A booklet ‘Mathematical Formulae and Statistical Tables’ is provided.
Full marks may be obtained for answers to ALL questions.
There are 9 questions in this question paper. The total mark for this paper is 75.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.
You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
62	54	46	38	30	22

1. (*a*) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer.

(2)

(*b*) Simplify fully $\left(\dfrac{25x^4}{4}\right)^{-\frac{1}{2}}$.

(2)

May 2012

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2. The points P and Q have coordinates (–1, 6) and (9, 0) respectively.

The line l is perpendicular to PQ and passes through the mid-point of PQ.

Find an equation for l, giving your answer in the form $ax + by + c = 0$, where a, b and c are integers.

(5)

May 2011

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3. A sequence a_1, a_2, a_3, ... is defined by

$$a_1 = 2,$$

$$a_{n+1} = 3a_n - c$$

where c is a constant.

(*a*) Find an expression for a_2 in terms of c.

(1)

Given that $\sum_{i=1}^{3} a_i = 0$,

(*b*) find the value of c.

(4)

January 2011

4.

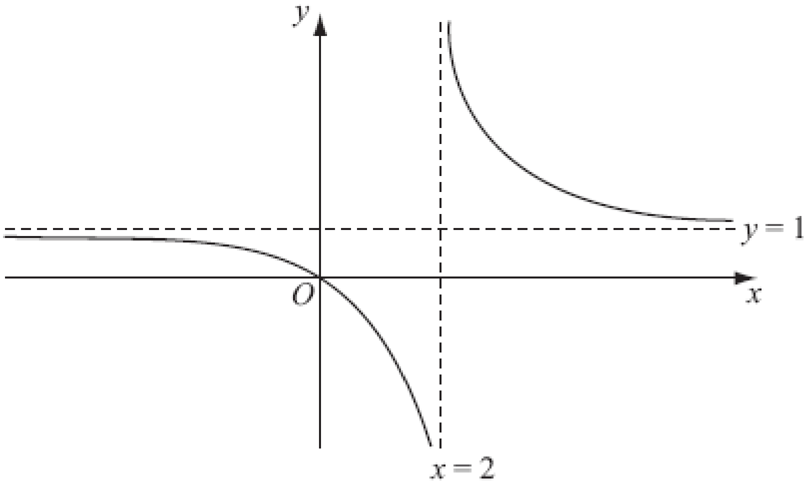

Figure 1

Figure 1 shows a sketch of the curve with equation $y = \mathrm{f}(x)$ where

$$\mathrm{f}(x) = \frac{x}{x-2}, \qquad x \neq 2.$$

The curve passes through the origin and has two asymptotes, with equations $y = 1$ and $x = 2$, as shown in Figure 1.

(*a*) In the space below, sketch the curve with equation $y = \mathrm{f}(x - 1)$ and state the equations of the asymptotes of this curve.

(3)

(*b*) Find the coordinates of the points where the curve with equation $y = \mathrm{f}(x - 1)$ crosses the coordinate axes.

(4)

January 2011

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5. The equation $x^2 + kx + (k + 3) = 0$, where k is a constant, has different real roots.

(*a*) Show that $k^2 - 4k - 12 > 0$.

(2)

(*b*) Find the set of possible values of k.

(4)

May 2007

6.
$$\frac{dy}{dx} = -x^3 + \frac{4x-5}{2x^3}, \quad x \neq 0.$$

Given that $y = 7$ at $x = 1$, find y in terms of x, giving each term in its simplest form.

(6)

January 2013

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7. The line L_1 has equation $4y + 3 = 2x$.

The point A $(p, 4)$ lies on L_1.

(a) Find the value of the constant p.

(1)

The line L_2 passes through the point C $(2, 4)$ and is perpendicular to L_1.

(b) Find an equation for L_2 giving your answer in the form $ax + by + c = 0$, where a, b and c are integers.

(5)

The line L_1 and the line L_2 intersect at the point D.

(c) Find the coordinates of the point D.

(3)

(d) Show that the length of CD is $\frac{3}{2}\sqrt{5}$.

(3)

A point B lies on L_1 and the length of $AB = \sqrt{80}$.

The point E lies on L_2 such that the length of the line CDE = 3 times the length of CD.

(e) Find the area of the quadrilateral $ACBE$.

(3)

May 2012

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8. (*a*) On the axes below sketch the graphs of

(i) $y = x(4 - x)$,

(ii) $y = x^2(7 - x)$,

showing clearly the coordinates of the points where the curves cross the coordinate axes.

(5)

(*b*) Show that the x-coordinates of the points of intersection of

$$y = x(4 - x) \quad \text{and} \quad y = x^2(7 - x)$$

are given by the solutions to the equation $x(x^2 - 8x + 4) = 0$.

(3)

The point A lies on both of the curves and the x and y coordinates of A are both positive.

(*c*) Find the exact coordinates of A, leaving your answer in the form $(p + q\sqrt{3},\ r + s\sqrt{3})$, where p, q, r and s are integers.

(7)

May 2010

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9. The curve C has equation

$$y = 2x - 8\sqrt{x} + 5, \quad x \geq 0.$$

(*a*) Find $\frac{\mathrm{d}y}{\mathrm{d}x}$, giving each term in its simplest form.

(3)

The point P on C has x-coordinate equal to $\frac{1}{4}$.

(*b*) Find the equation of the tangent to C at the point P, giving your answer in the form $y = ax + b$, where a and b are constants.

(4)

The tangent to C at the point Q is parallel to the line with equation $2x - 3y + 18 = 0$.

(*c*) Find the coordinates of Q.

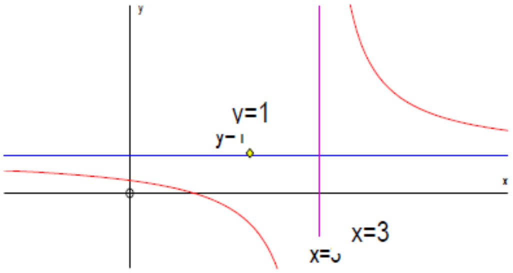
(5)

January 2013

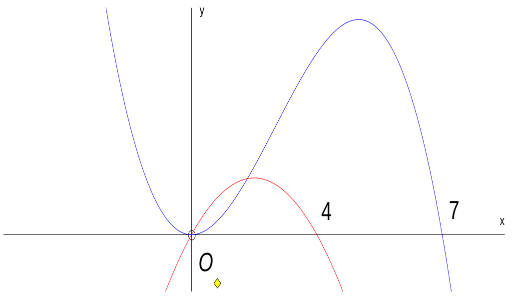
TOTAL FOR PAPER: 75 MARKS

END

Question Number	Scheme	Marks
1. (a)	$\left\{(32)^{\frac{3}{5}}\right\} = \left(\sqrt[5]{32}\right)^3$ or $\sqrt[5]{(32)^3}$ or 2^3 or $\sqrt[5]{32768}$	M1
	$= 8$	A1
		(2)
(b)	$\left\{\left(\dfrac{25x^4}{4}\right)^{-\frac{1}{2}}\right\} = \left(\dfrac{4}{25x^4}\right)^{\frac{1}{2}}$ or $\left(\dfrac{5x^2}{2}\right)^{-1}$ or $\dfrac{1}{\left(\dfrac{25x^4}{4}\right)^{\frac{1}{2}}}$	M1
	$= \dfrac{2}{5x^2}$ or $\dfrac{2}{5}x^{-2}$	A1
		(2) **[4]**
2.	Mid-point of PQ is (4, 3)	B1
	PQ: $m = \dfrac{0-6}{9-(-1)}$, $\left(= -\dfrac{3}{5}\right)$	B1
	Gradient perpendicular to PQ $= -\dfrac{1}{m}$ $\left(= \dfrac{5}{3}\right)$	M1
	$y - 3 = \dfrac{5}{3}(x-4)$	M1
	$5x - 3y - 11 = 0$ or $3y - 5x + 11 = 0$ or multiples e.g. $10x - 6y - 22 = 0$	A1
		[5]
3. (a)	$(a_2 =)\ 6 - c$	B1
		(1)
(b)	$a_3 = 3(\text{their } a_2) - c$ $(= 18 - 4c)$	
	$a_1 + a_2 + a_3 = 2 + \text{“}(6 - c)\text{”} + \text{“}(18 - 4c)\text{”}$	
	“$26 - 5c$” $= 0$	
	So $c = 5.2$	
		(4) **[5]**

Question Number	Scheme		Marks
4. (a)		Correct shape with a single crossing of each axis y = 1 labelled or stated x = 3 labelled or stated	B1 B1 B1 (3)
(b)	Horizontal translation so crosses the x-axis at (1, 0) New equation is (y =) $\dfrac{x \pm 1}{(x \pm 1) - 2}$ When x = 0 y = $= \dfrac{1}{3}$		B1 M1 M1 A1 (4) **[7]**
5. (a)	Attempt to use discriminant $b^2 - 4ac$ $k^2 - 4(k+3) > 0 \;\Rightarrow\; k^2 - 4k - 12 > 0$	(*)	M1 A1cso (2)
(b)	$k^2 - 4k - 12 = 0 \quad \Rightarrow$ $(k \pm a)(k \pm b)$, with $ab = 12$ or $(k =)\dfrac{4 \pm \sqrt{4^2 - -4 \times 12}}{2}$ or $(k-2)^2 \pm 2^2 - 12$ k = –2 and 6 $\underline{k < -2, \quad k > 6}$ or $\underline{(-\infty, -2); (6, \infty)}$	 (both)	 M1 A1 M1 A1ft (4) **[6]**
6.	$(\dfrac{dy}{dx} =) \quad -x^3 + "2"x^{-2} - "\left(\dfrac{5}{2}\right)"x^{-3}$ $(y =) \quad -\dfrac{1}{4}x^4 + \dfrac{"2"x^{-1}}{(-1)} - "\left(\dfrac{5}{2}\right)"\dfrac{x^{-2}}{(-2)} (+c)$ $(y =) \quad -\dfrac{1}{4}x^4 + \dfrac{2x^{-1}}{(-1)} - \dfrac{5}{2}\dfrac{x^{-2}}{(-2)} (+c)$ Given that $y = 7$, at $x = 1$, then $7 = -\frac{1}{4} - 2 + \frac{5}{4} + c \;\Rightarrow\; c =$ So, $(y =) \quad -\dfrac{1}{4}x^4 - 2x^{-1} + \dfrac{5}{4}x^{-2} + c$, $c = 8$ **or** $(y =) -\dfrac{1}{4}x^4 - 2x^{-1} + \dfrac{5}{4}x^{-2} + 8$		M1 M1 A1ft A1 M1 A1 **[6]**

Question Number	Scheme	Marks
7.	$L_1:\ 4y+3=2x \Rightarrow y=\frac{1}{2}x-\frac{3}{4};\ \ A(p,4)$ lies on L_1.	
(a)	$\{p=\}\ 9\frac{1}{2}$ or $\frac{19}{2}$ or 9.5	B1
		(1)
(b)	$\{4y+3=2x\} \Rightarrow y=\frac{2x-3}{4} \Rightarrow m(L_1)=\frac{1}{2}$ or $\frac{2}{4}$	M1 A1
	So $m(L_2)=-2$	B1ft
	$L_2:\ y-4=-2(x-2)$	M1
	$L_2:\ 2x+y-8=0$ or $L_2:\ 2x+1y-8=0$	A1
		(5)
(c)	$\{L_1=L_2 \Rightarrow\}\ 4(8-2x)+3=2x$ or $-2x+8=\frac{1}{2}x-\frac{3}{4}$	M1
	$x=3.5,\ y=1$	A1, A1 cso
		(3)
(d)	$CD^2=("3.5"-2)^2+("1"-4)^2$	"M1"
	$CD=\sqrt{("3.5"-2)^2+("1"-4)^2}$	A1 ft
	$=\sqrt{1.5^2+3^2}=1.5\sqrt{1^2+2^2}=1.5\sqrt{5}$ or $\frac{3}{2}\sqrt{5}$ **(*)**	A1 cso
		(3)
(e)	Area = triangle *ABC* + triangle *ABE*	
	$=\frac{1}{2}\times\frac{3}{2}\sqrt{5}\times\sqrt{80}+\frac{1}{2}\times 3\sqrt{5}\times\sqrt{80}$ Finding the area of any triangle.	M1
	$=\frac{3}{4}\sqrt{5}\times 4\sqrt{5}+\frac{3}{2}\sqrt{5}\times 4\sqrt{5}$	
	$=\frac{3}{4}(20)+\frac{3}{2}(20)$	B1
	$=45$	A1
		(3)
		[15]

Question Number	Scheme	Marks
8. (a)		
	(i) $\cap$ shape (anywhere on diagram)	B1
	Passing through or stopping at (0, 0) and (4,0) only	B1
	(ii) correct shape (-ve cubic) with a max and min drawn anywhere	B1
	Minimum or maximum at (0,0)	B1
	Passes through or stops at (7,0) but <u>NOT</u> touching.	B1
		(5)
(b)	$x(4-x)=x^2(7-x)$ $(0=)x[7x-x^2-(4-x)]$	M1
	$(0=)x[7x-x^2-(4-x)]$ (o.e.)	B1ft
	$0=x(x^2-8x+4)$ *	A1cso
		(3)
(c)	$(0=x^2-8x+4\Rightarrow)\,x=\dfrac{8\pm\sqrt{64-16}}{2}$ or	M1
	$(x\pm4)^2-4^2+4(=0)$	M1
	$(x-4)^2=12$	A1
	$=\dfrac{8\pm4\sqrt{3}}{2}$ or $(x-4)=\pm2\sqrt{3}$	B1
	$x=4\pm2\sqrt{3}$	A1
	From sketch A is $x=4-2\sqrt{3}$	M1
	So $y=(4-2\sqrt{3})(4-[4-2\sqrt{3}])$ (dependent on 1st M1)	M1
	$\underline{=-12+8\sqrt{3}}$	A1
		(7)
		[15]

Question Number	Scheme	Marks
9.	$C: y = 2x - 8\sqrt{x} + 5, \quad x \geq 0$	
(a)	So, $y = 2x - 8x^{\frac{1}{2}} + 5$	
	$\frac{\mathrm{d}y}{\mathrm{d}x} = 2 - 4x^{-\frac{1}{2}} + \{0\} \qquad (x > 0)$	M1 A1 A1
		(3)
(b)	(When $x = \frac{1}{4}$, $y = 2\left(\frac{1}{4}\right) - 8\sqrt{\left(\frac{1}{4}\right)} + 5$ so) $\quad y = \frac{3}{2}$	B1
	(gradient $= \frac{\mathrm{d}y}{\mathrm{d}x} =$) $2 - \frac{4}{\sqrt{\left(\frac{1}{4}\right)}} \quad \{= -6\}$	M1
	Either : $y - "\frac{3}{2}" = "-6"\left(x - \frac{1}{4}\right)$ **or**: $y = "-6"x + c$ and $"\frac{3}{2}" = "-6"\left(\frac{1}{4}\right) + c \Rightarrow c = "3"$	M1
	So $\underline{y = -6x + 3}$	A1
		(4)
(c)	Tangent at Q is parallel to $2x - 3y + 18 = 0$	
	$(y = \frac{2}{3}x + 6 \Rightarrow)$ Gradient $= \frac{2}{3}$. so tangent gradient is $\frac{2}{3}$	B1
	So, $"2 - \frac{4}{\sqrt{x}}" = "\frac{2}{3}"$	M1
	$\Rightarrow \frac{4}{3} = \frac{4}{\sqrt{x}} \Rightarrow x = 9$	A1
	When $x = 9$, $y = 2(9) - 8\sqrt{9} + 5 = -1$	M1 A1
		(5)
		[12]

Examiner reports

Question 1

This question proved discriminating with about a third of the candidature gaining all 4 marks.

In part (a), the majority of candidates were able to evaluate $32^{\frac{3}{5}}$ as 8. Many of those who were unable to achieve 8, were able to score one mark by rewriting $32^{\frac{3}{5}}$ as either $\left(\sqrt[5]{32}\right)^3$ or $\sqrt[5]{32^3}$. Those candidates who chose to cube 32 first to give 32768 were usually unable to find $\sqrt[5]{32768}$. Common errors in this part included rewriting $32^{\frac{3}{5}}$ as either $\frac{3}{5}\times 32$ or $3\left(\sqrt[5]{32}\right)$; or evaluating 2^3 as 6.

Part (b) proved more challenging than part (a), with the majority of candidates managing to obtain at least one of the two marks available by demonstrating the correct use of either the reciprocal or square root on $\left(\frac{25x^4}{4}\right)$. The most able candidates (who usually reciprocated first before square rooting) were able to proceed efficiently to the correct answer. The most common mistake was for candidates not to square root or not to reciprocate all three elements in the brackets. It was common for candidates to give any of the following incorrect answers: $\frac{5}{2}x^{-2}$, $\frac{25}{4}x^{-2}$, $\frac{2}{5}x^{\frac{7}{2}}$, $100x^{-2}$, $\frac{2}{5x^4}$ or $\frac{5x^4}{2}$.

Question 2

This question was generally done well with many candidates scoring full marks. However, there were a number of errors seen and these included solutions where the equation of the line *PQ* was given as their answer for the equation of *l*. A number of candidates did not attempt to find the midpoint and instead used the points given in the question in their equation for *l*. This was the most common mistake. A popular incorrect formula for the midpoint was $\left(\frac{x_2 - x_1}{2}, \frac{y_2 - y_1}{2}\right)$, giving (5, –3). Errors were also seen in finding the gradient, where a large number of responses got the original gradient upside down. Finding the negative reciprocal of a negative fraction resulted in further errors.

After completely correct work some candidates did not give an integer form of the equation for *l* and lost the final mark. Time was wasted here; by those who worked out the equation of *PQ* as well as that of *l*. Candidates need to be reminded to quote formulae and substitute numbers into them carefully, to avoid the more common errors.

Question 3

On the whole, this was a high scoring question, with most candidates understanding the notation and 45% obtaining full marks. Almost all candidates earned the first mark for $6 - c$ or $3 \times 2 - c$, given as their answer in part (a). A correct expression for the third term was seen regularly, occasionally followed by incorrect simplification to $18 - 2c$ or even $18 - c$. Candidates who attempted to use the formula for the sum of an Arithmetic Progression lost the final three marks. A few candidates simply equated the expression for the third term to zero and solved to find *c*, ignoring or not understanding the summation.

Question 4

In part (a) there were many well drawn correct graphs with the new asymptotes clearly labelled. Where asymptotes were correct the most common error lay in the position of the left hand branch of the curve, which was either drawn through the origin or crossed the negative axes. Most candidates recognised a translation and all manner of one unit translations, including movement in both x and y directions at once, were seen.

The first mark in part (b) was gained by many for marking the required point on the x-axis. A number of candidates stopped at this point. Others tried substituting $x = 0$ into the original equation. Better candidates obtained the y-intercept by evaluating f(–1) and usually scored full marks (with only a few leaving their answer as "$\frac{1}{3}$" without indicating anywhere that this was the y coordinate of the intercept). Those that attempted to find an algebraic expression for $f(x - 1)$ often scored the first M1, but a number of these did not make sensible use of it (i.e. did not substitute $x = 0$) and so did not score the second M1. M0M1A0 was reasonably common, often awarded for using $x = 0$ in $f(x) - 1$.

Some horrendous algebra was seen by those struggling to find the y intercept in this part and even attempts to solve $(x - 1) = x/(x - 2)$ were tried in some cases.

Question 5

The quality of answers to this question was better than to similar questions in previous years. Most used the discriminant to answer part (a) and, apart from occasional slips with signs, were able to establish the inequality correctly. A few realised that the discriminant had to be used but tried to apply it to $k^2 - 4k - 12$. In part (b) the majority were able to find the critical values of –2 and 6 but many then failed to find the correct inequalities with $x > -2$ and $x > 6$ being a common incorrect answer. Some candidates still thought that the correct regions could be written as $6 < k < -2$ but there were many fully correct solutions seen often accompanied by correct sketches.

Question 6

Some candidates were able to obtain full marks on this question. Less able candidates found it challenging to separate the fraction into its two parts ready for integration. Those that were able to obtain a three term polynomial often made mistakes with the coefficients which they found numerically difficult to manipulate. A common step before they attempted the integration was to write $-x^3 + 8x^{-2} - 10x^{-3}$ with incorrect coefficients of the second and third term. Usually integration of the first term was fine and the general principle of integration was understood, but negative powers caused difficulties e.g. $-3 + 1 = -4$ was a common error.

Some tried to integrate the terms in the fraction without simplifying first. So they integrated the numerator and they integrated the denominator. The majority of candidates were able to obtain the method mark for finding the constant of integration but the subsequent arithmetic was often found to be a challenge for the candidates.

Question 7

This question proved discriminating across all abilities with about a quarter of the candidature gaining at least 12 out of the 15 marks available. A significant number of candidates gave up on this question before they reached part (e).

Part (a) was well answered by the majority of candidates. After the substitution $y = 4$, most were able to obtain $p = \frac{19}{2}$, although some simplified this to 8.5.

Again, part (b) was well answered with many candidates rearranging $4y + 3 = 2x$ into the form $y = mx + c$, in order to find the gradient of L_1. Occasional use of two points on L_1 was seen as an alternative approach to finding the gradient of L_1, whilst some felt it necessary (normally successfully) to differentiate their L_1 after rearranging. Most candidates were able to use the perpendicular gradient rule to write down the gradient of L_2 and use this gradient to find an equation of L_2. Methods of approach were roughly equally divided between those using $y - y_1 = m(x - x_1)$ or $y = mx + c$. The majority of candidates were able to simplify their equation into a correct form of $ax + by + c = 0$, although some rearranged $y - 4 = -2(x - 2)$ incorrectly to give $y + 2x = 0$. Common errors in this part included candidates incorrectly finding the gradient of L_1 by finding the gradient between A and C or stating the gradient as 2 from looking at the coefficient of x in $4y + 3 = 2x$.

In part (c), a large number of those with a correct equation of L_2 found the correct coordinates of D, with a few, fortunately, using their correct un-simplified version of L_2 rather than their incorrect rearrangement. The majority of candidates without a correct part (b) were able to demonstrate that they could solve the equation for L_1 and L_2 simultaneously and received some credit for this. There were a number of candidates who equated their equations for L_1 and L_2 to give $4y + 3 - 2x = 2x + y - 8$. Some manipulated this into $4x - 3y - 11 = 0$ and then gave up; whilst others continued to set $x = 0$ to find a value for y and similarly set $y = 0$ to find a value for x.

In part (d), it was pleasing to see many candidates able to make a good attempt at finding the distance between the points C and D. Some drew diagrams and others quoted a correct formula. Relatively few candidates got mixed up when determining the differences in the x-values and the differences in the y-values although a few used the incorrect formulae such as $\sqrt{(x_1 + x_2)^2 + (y_1 + y_2)^2}$ or $\sqrt{(x_1 - x_2)^2 - (y_1 - y_2)^2}$. Some candidates lost the final mark in this part by being unable to correctly manipulate fractions and surds whilst others did not provide sufficient working to arrive at the answer given on the paper.

Part (e) was the most challenging question on the paper with the majority of candidates not attempting it and many of those that did were only able to offer incomplete solutions. A significant number of candidates did not draw a clear diagram which is essential in understanding the nature of this problem. Those that were successful usually summed up the area of two relevant triangles (usually triangle ABC and triangle ABE) or found half the product of AB and CE, although a significant number of candidates used the incorrect method of finding the product of AB and CE. A few candidates used other more elaborate methods to find the correct area of 45. Some candidates attempted to find lengths of various lines without any apparent purpose and gave no indication of finding an area. A small number thought quadrilateral $ACBE$ was a trapezium.

Question 8

The majority sketched a quadratic and a cubic curve in part (a) but not always with the correct features. The quadratic was often U shaped and although the intercepts at (0, 0) and (4, 0) were mostly correct, sometimes the curve passes through (–4, 0) and (4, 0). The cubic was sometimes a positive cubic and whilst it often passes through (0, 0) and (7, 0) the turning point was not always at the origin and the intercept was sometimes at (–7, 0).

Part (b) caused few problems with most candidates scoring full marks here.

Most could start part (c) and the quadratic formula was usually used to solve their equation. Although many simplified $\sqrt{48}$ to $4\sqrt{3}$ several candidates failed to divide by 2 correctly and gave their answers as $x = 4 \pm 4\sqrt{3}$. Most realised they needed to find the *y*-coordinate as well and usually they substituted their value of *x* into the quadratic equation to find *y*, though some chose the much less friendly cubic equation instead.

The selection of the correct solution defeated all but the best candidates. Most successful solutions involved checking the *y* coordinates for both $x = 4 + 2\sqrt{3}$ and $x = 4 - 2\sqrt{3}$ and, if the calculations were correct, selecting the one that gave a positive *y* coordinate. Only a rare minority realised that the required point would have an *x* coordinate in the interval (0, 4) and therefore only the $x = 4 - 2\sqrt{3}$ case need be considered.

Question 9

On the whole part (a) was very well done with the majority of candidates gaining full marks. Only a very small minority attempted integration and hardly anyone received less than two marks from the three available. The majority of candidates reached $2 - 4x^{-\frac{1}{2}}$. Common errors seen were $2 - 4x^{\frac{3}{2}}$ or $2 - 4x^{-\frac{1}{2}} + 5x$. The fractional powers were usually dealt with correctly on this part of the question.

In part (b) many reached the correct answer of $y = -6x + 3$. Errors were made substituting $x = \frac{1}{4}$ into $4x^{-\frac{1}{2}}$ to obtain gradient and further errors made substituting into the expression for *y*. Some candidates found working with fractions challenging, e.g. $\frac{1}{4}^{\frac{1}{2}} = 2$, so gradient equal to $2 - 4/2 = 0$. Some did not substitute $x = \frac{1}{4}$ into the function to get a *y* value but used (0, 5) to find the equation.

More able candidates answered part (c) well, realising that they were required to set their gradient function obtained in part (a) to $\frac{2}{3}$, the gradient of the given line. Some who got as far as $\frac{2}{3} = 2 - 4x^{-\frac{1}{2}}$ made errors in their algebra and these included $\frac{1}{\sqrt{x}} = \frac{1}{3}$, leading to $x = \frac{1}{9}$, or even $x = 3$ and $\sqrt{x} = 3$ leading to $x = \sqrt{3}$. Of those who successfully reached $x = 9$, some attempted to find the *y* value by substituting into $y = \frac{2}{3}x + 6$ instead of substituting into the original equation. There was a significant proportion of the candidates who, after rearranging the equation of the straight line into the form $y = mx + c$, were unable to progress to gain any marks at all for part (c). Of those who proceeded unsuccessfully, it was common to see $y = 0$, so $\frac{2}{3}x + 6 = 0$ leading to $x = -9$. Others found the points of intersection of $2x - 3y + 18 = 0$ and $y = -6x + 3$ or found the co-ordinates of points of intersection of $2x - 3y + 18 = 0$ with the *x* and *y* axes thus getting (0, 6) and (–9, 0). These answers did not answer the question set and gained no credit.

Statistics for C1 Practice Paper Gold Level G2

				Mean score for students achieving grade:							
Qu	**Max score**	**Modal score**	**Mean %**	**ALL**	**A***	**A**	**B**	**C**	**D**	**E**	**U**
1	4		68	2.72	3.92	3.58	3.18	2.84	2.54	2.28	1.53
2	5		69	3.43	4.80	4.59	4.16	3.78	3.34	2.78	1.53
3	5		63	3.13	4.88	4.61	4.09	3.49	2.96	2.43	1.65
4	7		59	4.11	6.83	6.30	5.11	4.36	3.71	3.22	2.11
5	6		63	3.80		5.51	4.70	4.00	3.24	2.62	1.38
6	6		58	3.48	5.96	5.05	4.23	3.71	3.34	2.84	1.43
7	15		55	8.23	13.73	12.01	10.48	9.06	7.57	5.98	2.73
8	15		52	7.81	14.05	12.45	10.29	8.40	6.41	4.53	2.09
9	12		52	6.23	11.80	10.30	7.99	6.36	5.39	4.43	2.90
	75		**57**	**42.94**		**64.40**	**54.23**	**46.00**	**38.50**	**31.11**	**17.35**