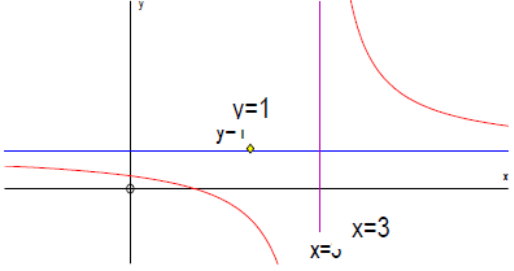


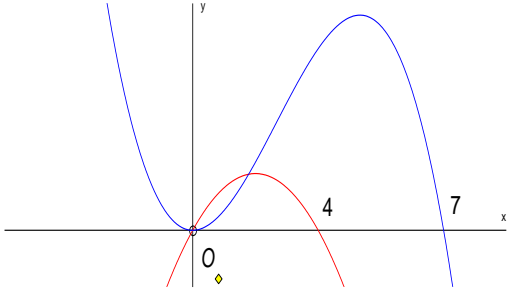
**Edexcel GCE  
Core Mathematics C1  
Gold Level G1  
(Mark Scheme)**

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Mr.S.V.Swarnaraja (Marking Examiner, Team Leader & Author)  
[www.swanash.com](http://www.swanash.com), Mobile: +94777304755 , email: [swa@swanash.com](mailto:swa@swanash.com)**

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

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

Question Number	Scheme	Marks
7.	$L_1: 4y + 3 = 2x \Rightarrow y = \frac{1}{2}x - \frac{3}{4}; A(p, 4) \text{ lies on } L_1.$	
(a)	$\{p = \} 9\frac{1}{2} \text{ or } \frac{19}{2} \text{ or } 9.5$	B1 (1)
(b)	$\{4y + 3 = 2x\} \Rightarrow y = \frac{2x - 3}{4} \Rightarrow m(L_1) = \frac{1}{2} \text{ or } \frac{2}{4}$ So $m(L_2) = -2$ $L_2: y - 4 = -2(x - 2)$ $L_2: 2x + y - 8 = 0 \text{ or } L_2: 2x + 1y - 8 = 0$	M1 A1 B1ft M1 A1 (5)
(c)	$\{L_1 = L_2 \Rightarrow\} 4(8 - 2x) + 3 = 2x \text{ or } -2x + 8 = \frac{1}{2}x - \frac{3}{4}$ $x = 3.5, y = 1$	M1 A1, A1 cso (3)
(d)	$CD^2 = ("3.5" - 2)^2 + ("1" - 4)^2$ $CD = \sqrt{("3.5" - 2)^2 + ("1" - 4)^2}$ $= \sqrt{1.5^2 + 3^2} = 1.5\sqrt{1^2 + 2^2} = 1.5\sqrt{5} \text{ or } \frac{3}{2}\sqrt{5} (*)$	"M1" A1 ft 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. $= \frac{3}{4}\sqrt{5} \times 4\sqrt{5} + \frac{3}{2}\sqrt{5} \times 4\sqrt{5}$ $= \frac{3}{4}(20) + \frac{3}{2}(20)$ $= 45$	M1  B1 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
	(b) $x(4-x) = x^2(7-x)$ (0 $\Rightarrow$ ) $x[7x - x^2 - (4-x)]$ M1 $(0 \Rightarrow) x[7x - x^2 - (4-x)]$ (o.e.) B1ft $0 = x(x^2 - 8x + 4)$ * A1cso (3) (c) $(0 = x^2 - 8x + 4 \Rightarrow) x = \frac{8 \pm \sqrt{64-16}}{2}$ or M1 $(x \pm 4)^2 - 4^2 + 4 (= 0)$ M1 $(x-4)^2 = 12$ A1 $= \frac{8 \pm 4\sqrt{3}}{2}$ or $(x-4) = \pm 2\sqrt{3}$ B1 $x = 4 \pm 2\sqrt{3}$ A1 From sketch A is $x = 4 - 2\sqrt{3}$ M1 So $y = (4 - 2\sqrt{3})(4 - [4 - 2\sqrt{3}])$ (dependent on 1 <sup>st</sup> M1) M1 $= -12 + 8\sqrt{3}$ A1 (7) <b>[15]</b>	

Question Number	Scheme	Marks
<p><b>9.</b></p> <p>(a)</p> <p>(b)</p> <p>(c)</p>	<p><math>C: y = 2x - 8\sqrt{x} + 5, \quad x \geq 0</math></p> <p>So, <math>y = 2x - 8x^{\frac{1}{2}} + 5</math></p> <p><math>\frac{dy}{dx} = 2 - 4x^{-\frac{1}{2}} + \{0\} \quad (x &gt; 0)</math></p> <p>(When <math>x = \frac{1}{4}, y = 2(\frac{1}{4}) - 8\sqrt{(\frac{1}{4})} + 5</math> so) <math>y = \frac{3}{2}</math></p> <p>(gradient = <math>\frac{dy}{dx} = 2 - \frac{4}{\sqrt{(\frac{1}{4})}} \{ = -6 \}</math>)</p> <p><b>Either:</b> <math>y - \frac{3}{2} = -6(x - \frac{1}{4})</math>      <b>or:</b> <math>y = -6x + c</math> and  <math>\frac{3}{2} = -6(\frac{1}{4}) + c \Rightarrow c = 3</math></p> <p><b>So</b> <u><math>y = -6x + 3</math></u></p> <p>Tangent at <math>Q</math> is parallel to <math>2x - 3y + 18 = 0</math>  <math>(y = \frac{2}{3}x + 6 \Rightarrow)</math> Gradient = <math>\frac{2}{3}</math>. so tangent gradient is <math>\frac{2}{3}</math></p> <p>So, <math>2 - \frac{4}{\sqrt{x}} = \frac{2}{3}</math></p> <p><math>\Rightarrow \frac{4}{3} = \frac{4}{\sqrt{x}} \Rightarrow x = 9</math></p> <p>When <math>x = 9, y = 2(9) - 8\sqrt{9} + 5 = -1</math></p>	<p>M1 A1 A1 (3)</p> <p>B1</p> <p>M1</p> <p>M1</p> <p>A1 (4)</p> <p>B1</p> <p>M1</p> <p>A1</p> <p>M1 A1 (5)</p> <p><b>[12]</b></p>

## Statistics for C1 Practice Paper Gold Level G2

Qu	Max score	Modal score	Mean %	Mean score for students achieving grade:							
				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
	<b>75</b>		<b>57</b>	<b>42.94</b>		<b>64.40</b>	<b>54.23</b>	<b>46.00</b>	<b>38.50</b>	<b>31.11</b>	<b>17.35</b>