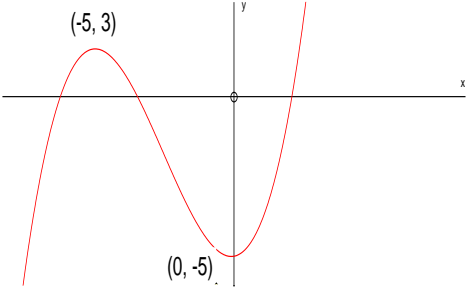
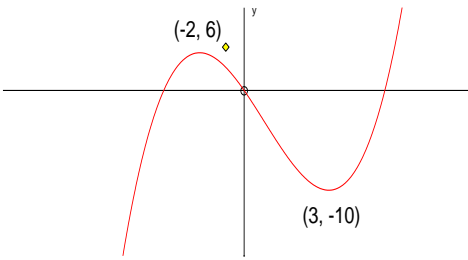
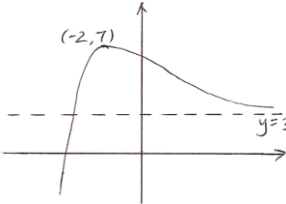
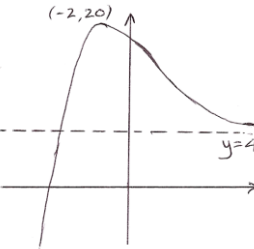
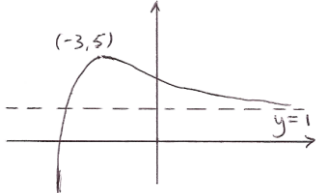


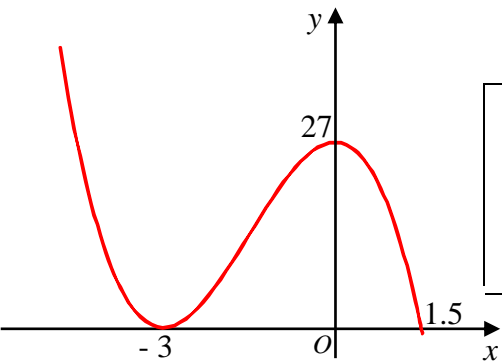
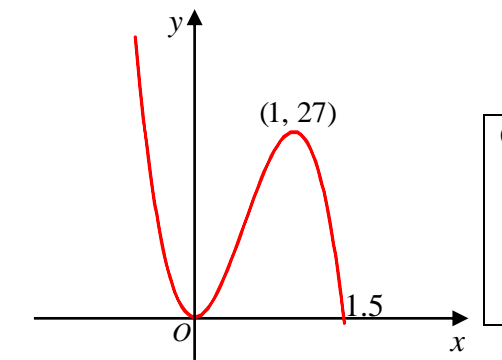
**Edexcel GCE  
Core Mathematics C1  
Bronze Level B1  
(Mark Scheme)**

**All exam papers are issued free to students for education purpose only.  
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Question Number	Scheme	Marks
<b>1</b>	$3x^2 \rightarrow kx^3$ or $4x^5 \rightarrow kx^6$ or $-7 \rightarrow kx$ ( $k$ a non-zero constant)	M1
	$\frac{3x^3}{3}$ or $\frac{4x^6}{6}$ (Either of these, simplified or unsimplified)	A1
	$x^3 + \frac{2x^6}{3} - 7x$ or equivalent unsimplified, such as $\frac{3x^3}{3} + \frac{4x^6}{6} - 7x^1$	A1
	+ $C$ (or any other constant, e.g. + $K$ )	B1 <b>[4]</b>
<b>2</b>	$(I =) \frac{12}{6}x^6 - \frac{8}{4}x^4 + 3x + c$ $= 2x^6 - 2x^4 + 3x + c$	M1 A1A1A1 <b>[4]</b>
<b>3</b>	$\sqrt{7^2} + 2\sqrt{7} - 2\sqrt{7} - 2^2$ , or $7 - 4$ or an exact equivalent such as $\sqrt{49} - 2^2$ $= 3$	M1 A1 <b>[2]</b>
<b>4. (a)</b>	$y = 5x^3 - 6x^{\frac{4}{3}} + 2x - 3$ $\left\{ \frac{dy}{dx} = \right\} 5(3)x^2 - 6\left(\frac{4}{3}\right)x^{\frac{1}{3}} + 2$ $= 15x^2 - 8x^{\frac{1}{3}} + 2$	M1 A1A1A1 <b>(4)</b>
	<b>(b)</b> $\left\{ \frac{d^2y}{dx^2} = \right\} 30x - \frac{8}{3}x^{-\frac{2}{3}}$	M1 A1 <b>(2)</b> <b>[6]</b>
<b>5. (a)</b>	$6x + x > 1 - 8$ $x > -1$	M1 A1 <b>(2)</b>
	<b>(b)</b> $(x + 3)(3x - 1) [= 0] \Rightarrow x = -3$ and $\frac{1}{3}$ $-3 < x < \frac{1}{3}$	M1A1 M1A1ft <b>(4)</b> <b>[6]</b>

Question Number	Scheme	Marks
<p><b>6.</b></p> <p>(a)</p> <p>(b)</p> <p>(c) <math>(a = ) \underline{5}</math></p>	 <p>Horizontal translation of <math>\pm 3</math></p> <p><math>(-5, 3)</math> marked on sketch <b>or in text</b></p> <p><math>(0, -5)</math> and min intentionally on y-axis</p> <p>Condone <math>(-5, 0)</math> if correctly placed on negative y-axis</p>  <p>Correct shape and intentionally through <math>(0,0)</math> between the max and min</p> <p><math>(-2, 6)</math> marked on graph <b>or in text</b></p> <p><math>(3, -10)</math> marked on graph <b>or in text</b></p>	<p>M1</p> <p>B1</p> <p>A1 (3)</p> <p>B1</p> <p>B1</p> <p>B1 (3)</p> <p>B1 (1)</p> <p><b>[7]</b></p>
<p><b>7.</b></p>	<p>(a) <math>a + 9d = 150 + 9 \times 10 = 240</math></p> <p>(b) <math>\frac{1}{2}n\{2a + (n-1)d\} = \frac{20}{2}\{2 \times 150 + 19 \times 10\}, = 4900</math></p> <p>(c) Kevin: <math>\frac{1}{2}n\{2a + (n-1)d\} = \frac{20}{2}\{2A + 19 \times 30\}</math>  Kevin's total = <math>2 \times "4900"</math> (or "<math>4900</math>" = <math>2 \times</math> Kevin's total)  <math>\frac{20}{2}\{2A + 19 \times 30\} = 2 \times "4900"</math>    <math>A = 205</math></p>	<p>M1 A1 (2)</p> <p>M1 A1, A1 (3)</p> <p>B1</p> <p>M1</p> <p>A1ft</p> <p>A1</p> <p>(4)</p> <p><b>[9]</b></p>

Question Number	Scheme	Marks
8.	<p>(a) </p> <p>(b) </p> <p>(c) </p>	
	<p>(a) <math>(-2, 7), y = 3</math> (Marks are dependent upon a sketch being attempted)</p>	B1, B1 (2)
	<p>(b) <math>(-2, 20), y = 4</math> (Marks are dependent upon a sketch being attempted)</p>	B1, B1 (2)
	<p>(c) Sketch: Horizontal translation (either way)... (There must be evidence that <math>y = 5</math> at the max and that the asymptote is still <math>y = 1</math>) <math>(-3, 5), y = 1</math></p>	B1  B1, B1 (3) <b>[7]</b>
9. (a)	$(3 - x^2)^2 = 9 - 6x^2 + x^4$  $9x^{-2} + x^2$  $-6$	M1  A1  A1  (3)
	<p>(b) <math>-18x^{-3} + 2x</math></p>	M1 A1ft  (2)
	<p>(c) <math>f(x) = -9x^{-1} - 6x + \frac{x^3}{3} (+c)</math></p>	M1A1ft
	$10 = \frac{-9}{-3} - 6(-3) + \frac{(-3)^3}{3} + c$ so $c = \dots$  $c = -2$	M1  A1 cso
	$(f(x) =) -9x^{-1} - 6x + \frac{x^3}{3} + \text{their } c$	A1ft  (5) <b>[10]</b>

Question Number	Scheme	Marks
<p>10. (a) {Coordinates of A are} (4.5, 0)</p> <p>(b)(i)</p> <p>(ii)</p> <p>(c)</p>	<p>{Coordinates of A are} (4.5, 0)</p>  <p>Horizontal translation -3 and their ft 1.5 on positive <math>x</math>-axis Maximum at 27 marked on the <math>y</math>-axis</p>  <p>Correct shape, minimum at (0, 0) and a maximum within the first quadrant. 1.5 on <math>x</math>-axis Maximum at (1, 27)</p> <p>{k = } -17</p>	<p>B1 (1)</p> <p>M1 A1 ft B1 (3)</p> <p>M1 A1 ft B1 (3)</p> <p>B1 (1) [8]</p>
<p>11. (a)</p> <p>(b)</p> <p>(c)</p> <p>Gradient of the normal = <math>-1 \div \frac{7}{2}</math></p> <p>Equation of normal: <math>y - -8 = \frac{2}{7}(x - 4)</math></p> <p><math>7y - 2x + 64 = 0</math></p>	$\left(\frac{dy}{dx}\right) \frac{3}{2}x^2 - \frac{27}{2}x^{\frac{1}{2}} - 8x^{-2}$ $x = 4 \Rightarrow y = \frac{1}{2} \times 64 - 9 \times 2^3 + \frac{8}{4} + 30$ $= 32 - 72 + 2 + 30 = -8$ $x = 4 \Rightarrow y' = \frac{3}{2} \times 4^2 - \frac{27}{2} \times 2 - \frac{8}{16}$ $= 24 - 27 - \frac{1}{2} = -\frac{7}{2}$ <p>Equation of normal: <math>y - -8 = \frac{2}{7}(x - 4)</math></p> $7y - 2x + 64 = 0$	<p>M1 A1 A1 A1 (4)</p> <p>M1 A1cso (2)</p> <p>M1 A1</p> <p>M1 M1A1ft A1 (6) [12]</p>

## Statistics for C1 Practice Paper Bronze Level B1

Qu	Max score	Modal score	Mean %	Mean score for students achieving grade:							
				ALL	A*	A	B	C	D	E	U
1	4		91	3.63		3.98	3.91	3.87	3.84	3.61	2.87
2	4		92	3.66		3.96	3.89	3.86	3.70	3.65	2.86
3	2		92	1.83		1.95	1.90	1.89	1.88	1.79	1.55
4	6		90	5.38	5.93	5.86	5.75	5.63	5.48	5.28	4.39
5	6		83	4.96	5.91	5.82	5.57	5.30	4.99	4.65	3.53
6	7		82	5.77	6.89	6.75	6.43	6.14	5.80	5.43	4.08
7	9		85	7.63		8.75	8.35	8.15	7.72	7.07	5.68
8	7		78	5.49		6.56	6.13	5.90	5.16	4.84	3.27
9	10		75	7.45	9.79	9.54	9.02	8.48	7.80	6.91	3.91
10	8		74	5.89	7.82	7.59	7.15	6.58	5.89	5.07	3.03
11	12		67	8.03	11.72	11.43	10.51	9.29	7.89	6.47	3.90
	<b>75</b>		<b>80</b>	<b>59.72</b>		<b>72.19</b>	<b>68.61</b>	<b>65.09</b>	<b>60.15</b>	<b>54.77</b>	<b>39.07</b>