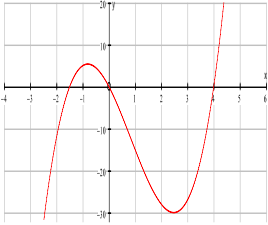
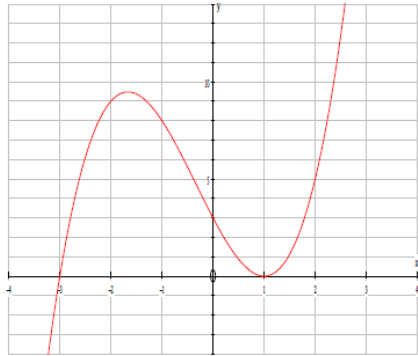



**Edexcel GCE
Core Mathematics C1
Bronze Level B3
(Mark Scheme)**

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Question Number	Scheme	Marks
1.	$\left\{ \int \left(6x^2 + \frac{2}{x^2} + 5 \right) dx \right\} = \frac{6x^3}{3} + \frac{2x^{-1}}{-1} + 5x (+c)$ $= 2x^3 - 2x^{-1} ; + 5x + c$	M1 A1 A1; A1 [4]
2.	$\frac{8x^4}{4} + \frac{6x^{\frac{3}{2}}}{\frac{3}{2}} - 5x + c$ $= 2x^4 + 4x^{\frac{3}{2}}, -5x + c$	M1 A1 A1 A1 [4]
3.	$\frac{(5-\sqrt{3})(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})}$ $= \frac{10-2\sqrt{3}-5\sqrt{3}+(\sqrt{3})^2}{\dots} \quad \left(= \frac{10-7\sqrt{3}+3}{\dots} \right)$ $(=13-7\sqrt{3}) \quad \left(\text{Allow } \frac{13-7\sqrt{3}}{1} \right)$ <p style="text-align: right;">13 ($a = 13$) $-7\sqrt{3}$ ($b = -7$)</p>	M1 A1 A1 A1 [4]
4. (a)	Identify $a = 5$ and $d = 2$ (May be implied) $(u_{200} =) a + (200-1)d \quad (= 5 + (200-1) \times 2)$ $= 403$ (p) or (£) <u>4.03</u>	B1 M1 A1 (3)
(b)	$(S_{200} =) \frac{200}{2} [2a + (200-1)d]$ or $\frac{200}{2} (a + \text{"their 403"})$ $= \frac{200}{2} [2 \times 5 + (200-1) \times 2]$ or $\frac{200}{2} (5 + \text{"their 403"})$ $= 40\ 800$ or <u>£408</u>	M1 A1 A1 (3) [6]
5. (a)	$a_2 = (\sqrt{4+3}) = \sqrt{7}$ $a_3 = \sqrt{\text{"their 7"}+3} = \sqrt{10}$	B1 B1ft (2)
(b)	$a_4 = \sqrt{10+3} (= \sqrt{13})$ $a_5 = \sqrt{13+3} = 4$ *	M1 A1 cso (2) [4]

Question Number	Scheme	Marks
<p>6.</p> <p>(a)</p>	<p>$(-1, 3)$, $(11, 12)$</p> $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12 - 3}{11 - (-1)}, = \frac{3}{4}$ <p>$y - 3 = \frac{3}{4}(x + 1)$ or $y - 12 = \frac{3}{4}(x - 11)$</p> <p>or $y = \frac{3}{4}x + c$ with attempt at substitution to find c</p> $4y - 3x - 15 = 0$ <p>(b) Solve equation from part (a) and L_2 simultaneously to eliminate one variable</p> $x = 3 \text{ or } y = 6$ <p>Both $x = 3$ and $y = 6$</p>	<p>M1, A1</p> <p>M1</p> <p>A1</p> <p>(4)</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>(3)</p> <p>[7]</p>
<p>7. (a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p>	<p>$5, 7, 9, 11$ or $5 + 2 + 2 + 2 = 11$ or $5 + 6 = 11$</p> <p>use $a = 5, d = 2, n = 4$ and $t_4 = 5 + 3 \times 2 = 11$</p> <p>$t_n = a + (n - 1)d$ with one of $a = 5$ or $d = 2$ correct</p> $= 5 + 2(n - 1) \text{ or } 2n + 3 \text{ or } 1 + 2(n + 1)$ <p>$S_n = \frac{n}{2}[2 \times 5 + 2(n - 1)]$ or use of $\frac{n}{2}(5 + \text{"their } 2n + 3\text{"})$</p> $= \{n(5 + n - 1)\} = n(n + 4) \quad (*)$ <p>$43 = 2n + 3$</p> $[n] = 20$ <p>$S_{20} = 20 \times 24, = \underline{480}$ (km)</p>	<p>B1 (1)</p> <p>M1</p> <p>A1 (2)</p> <p>M1 A1</p> <p>A1 cso (3)</p> <p>M1</p> <p>A1 (2)</p> <p>M1 A1 (2)</p> <p>[10]</p>
<p>8. (a)</p> <p>(b)</p> <p>(c)(i)</p> <p>(c)(ii)</p>	<p>$(a_2 =) 3k + 5$ [must be seen in part (a) or labelled $a_2 =$]</p> <p>$(a_3 =) 3(3k + 5) + 5$</p> $= 9k + 20$ <p>$a_4 = 3(9k + 20) + 5 (= 27k + 65)$</p> $\sum_{r=1}^4 a_r = k + (3k + 5) + (9k + 20) + (27k + 65)$ $= 40k + 90$ $= 10(4k + 9) \quad (\text{or explain why divisible by } 10)$	<p>B1 (1)</p> <p>M1</p> <p>A1cso (2)</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>A1ft (4)</p> <p>[7]</p>

Question Number	Scheme	Marks
<p>9. (a)</p>	$f(x) = \frac{6x^3}{3} - \frac{10x^2}{2} - 12x (+C)$ $x = 5: \quad 250 - 125 - 60 + C = 65 \quad C = 0$ <p>(b) $x(2x^2 - 5x - 12)$ or $(2x^2 + 3x)(x - 4)$ or $(2x + 3)(x^2 - 4x)$</p> $= x(2x + 3)(x - 4) \quad (*)$ <p>(c) </p>	<p>M1 A1</p> <p>M1 A1 (4)</p> <p>M1</p> <p>A1cso (2)</p> <p>B1</p> <p>B1</p> <p>B1 (3)</p> <p>[9]</p>
<p>10. (a)</p>	 <p>Shape  (drawn anywhere)</p> <p>Minimum at (1, 0)</p> <p>(perhaps labelled 1 on x-axis)</p> <p>(-3, 0) (or -3 shown on -ve x-axis)</p> <p>(0, 3) (or 3 shown on +ve y-axis)</p> <p>N.B. The max. can be anywhere.</p> <p>(b) $y = (x + 3)(x^2 - 2x + 1)$</p> $= x^3 + x^2 - 5x + 3 \quad (k = 3)$ <p>Marks can be awarded if this is seen in part (a)</p> <p>(c) $\frac{dy}{dx} = 3x^2 + 2x - 5$</p> $3x^2 + 2x - 5 = 3 \quad \text{or} \quad 3x^2 + 2x - 8 = 0$ $(3x - 4)(x + 2) = 0 \quad x = \dots$ $x = \frac{4}{3} \text{ (or exact equiv.)} \quad , \quad x = -2$	<p>B1</p> <p>B1</p> <p>B1</p> <p>B1</p> <p>(4)</p> <p>M1</p> <p>A1cso (2)</p> <p>M1 A1</p> <p>M1</p> <p>M1</p> <p>A1, A1 (6)</p> <p>[12]</p>

Question Number	Scheme	Marks
11. (a)	$(x^2 + 3)^2 = x^4 + 3x^2 + 3x^2 + 3^2$	M1
	$\frac{(x^2 + 3)^2}{x^2} = \frac{x^4 + 6x^2 + 9}{x^2} = x^2 + 6 + 9x^{-2} \quad (*)$	A1 cso (2)
	(b) $y = \frac{x^3}{3} + 6x + \frac{9}{-1}x^{-1} (+c)$	M1 A1 A1
	$20 = \frac{27}{3} + 6 \times 3 - \frac{9}{3} + c$	M1
	$c = -4$	A1
	$[y =] \frac{x^3}{3} + 6x - 9x^{-1} - 4$	A1 ft (6)
		[8]

Statistics for C1 Practice Paper Bronze Level B3

Mean score for students achieving grade:

Qu	Max score	Modal score	Mean %	ALL	A*	A	B	C	D	E	U
1	4		91	3.62	3.98	3.94	3.87	3.80	3.74	3.60	2.90
2	4		90	3.59	3.98	3.94	3.89	3.82	3.71	3.56	2.74
3	4		81	3.22		3.92	3.71	3.54	3.22	2.86	1.98
4	6		89	5.36		5.85	5.69	5.56	5.43	5.26	4.37
5	4		85	3.38	3.98	3.96	3.89	3.75	3.54	3.23	2.07
6	7		75	5.28	6.89	6.70	6.22	5.81	5.25	4.65	3.20
7	10		80	7.99		9.78	9.28	8.64	7.69	6.61	4.47
8	7		69	4.85		6.49	5.87	5.38	4.73	3.95	2.09
9	9		74	6.66		8.68	7.96	7.26	6.39	5.44	3.43
10	12		67	7.99		11.59	10.82	9.81	8.37	6.29	3.74
11	8		64	5.08		7.37	6.30	5.38	4.28	3.41	1.69
	75		76	57.02		72.22	67.50	62.75	56.35	48.86	32.68