FOR EDEXCEL

GCE Examinations

Advanced Subsidiary

# Core Mathematics C1

Paper L

## MARKING GUIDE

This guide is intended to be as helpful as possible to teachers by providing concise solutions and indicating how marks could be awarded. There are obviously alternative methods that would also gain full marks.

Method marks (M) are awarded for knowing and using a method.

Accuracy marks (A) can only be awarded when a correct method has been used.

(B) marks are independent of method marks.




*Written by Shaun Armstrong*

*© Solomon Press*

*These sheets may be copied for use solely by the purchaser's institute.*

# C1 Paper L – Marking Guide

**1.** $= \sqrt{49} + (\sqrt[3]{8})^2 = 7 + 2^2$ — B1 M1
$= 11$ — A1 **(3)**

---

**2.** *(a)* $u_4 = \frac{5+1}{3} = 2$ — B1

*(b)* $5 = \frac{u_2+1}{3}$, $u_2 = 14$ — M1 A1

$14 = \frac{u_1+1}{3}$, $u_1 = 41$ — A1 **(4)**

---

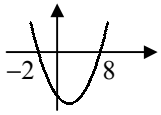
**3.** *(a)* $b^2 - 4ac = 12^2 - (4 \times 4 \times 9) = 0$ — M1
$\therefore$ 1 real root — A1

*(b)* $4x^2 + 12x + 9 = 8$
$4x^2 + 12x + 1 = 0$
$x = \frac{-12 \pm \sqrt{144-16}}{8}$ — M1
$= \frac{-12 \pm 8\sqrt{2}}{8}$ — M1
$= -\frac{3}{2} \pm \sqrt{2}$ — A2 **(6)**

---

**4.** *(a)* $5x > 15$ — M1
$x > 3$ — A1

*(b)* $(x + 2)(x - 8) < 0$ — M1




M1
$-2 < x < 8$ — A1

*(c)* $3 < x < 8$ — B1 **(6)**

---

**5.** *(a)* $(2 - \sqrt{x})^2 = 0$
$\sqrt{x} = 2$ — M1
$x = 4$ — A1

*(b)* $= (2 - \sqrt{3})^2 = 4 - 4\sqrt{3} + 3 = 7 - 4\sqrt{3}$ — M1 A1

*(c)* $= \int (2 - \sqrt{x})^2 \, dx$
$= \int (4 - 4\sqrt{x} + x) \, dx$ — B1
$= 4x - \frac{8}{3}x^{\frac{3}{2}} + \frac{1}{2}x^2 + c$ — M1 A2 **(8)**

---

**6.** *(a)* grad $= \frac{-4-6}{1-(-3)} = -\frac{5}{2}$ — M1 A1
$\therefore\ y - 6 = -\frac{5}{2}(x + 3)$ — M1
$2y - 12 = -5x - 15$
$5x + 2y + 3 = 0$ — A1

*(b)* $m$: $y = -\frac{2}{k}x - \frac{7}{k}$ $\therefore$ grad $= -\frac{2}{k}$ — M1 A1
$l$ and $m$ perp. $\therefore\ -\frac{5}{2} \times -\frac{2}{k} = -1$ — M1
$k = -5$ — A1 **(8)**

---

© Solomon Press

**7.** *(a)* $f(x) = \int (5 + \frac{4}{x^2})\ dx$

$f(x) = 5x - 4x^{-1} + c$ M1 A2

*(b)* $f(1) = 5 - 4 + c = 1 + c$ M1

$f(2) = 10 - 2 + c = 8 + c$

$f(2) = 2f(1) \quad \therefore \quad 8 + c = 2(1 + c)$ M1

$c = 6$ A1

$f(x) = 5x - 4x^{-1} + 6$

$f(4) = 20 - 1 + 6 = 25$ M1 A1 **(8)**

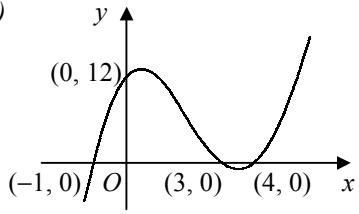
---

**8.** *(a)* $\text{LHS} = (x + 1)(x^2 - 7x + 12)$ M1

$= x^3 - 7x^2 + 12x + x^2 - 7x + 12$ M1

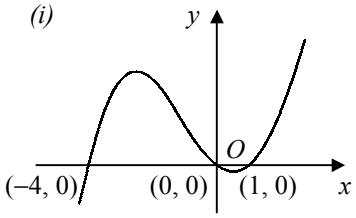
$= x^3 - 6x^2 + 5x + 12 = \text{RHS}$ A1

*(b)*

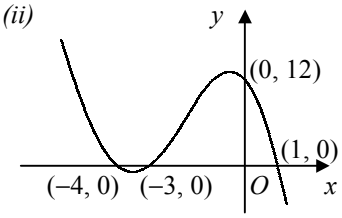



B3

*(c)* *(i)*




*(ii)*




B2 B2 **(10)**

---

**9.** *(a)* *(i)* $= (t^2 - 5) - (t - 1) = t^2 - t - 4$ M1 A1

*(ii)* $= (t^2 - 5) + (t^2 - t - 4) = 2t^2 - t - 9$ M1 A1

*(b)* $2t^2 - t - 9 = 19$

$2t^2 - t - 28 = 0$

$(2t + 7)(t - 4) = 0$ M1

$t > 0 \quad \therefore \ t = 4$ A1

*(c)* $a = 4 - 1 = 3, \ d = 16 - 4 - 4 = 8$ B1

$u_{10} = 3 + (9 \times 8) = 3 + 72 = 75$ M1 A1

*(d)* $= \frac{40}{2}[6 + (39 \times 8)] = 20 \times 318 = 6360$ M1 A1 **(11)**

---

**10.** *(a)* $A\ (0, 2)$ B1

$\frac{dy}{dx} = 3 - 2x$ M1 A1

$\text{grad} = 3$ M1

$\therefore \ y = 3x + 2$ A1

*(b)* grad of $m = 3$

grad of curve at $B = \frac{-1}{3} = -\frac{1}{3}$ M1 A1

at $B$: $\quad 3 - 2x = -\frac{1}{3}$

$x = \frac{5}{3}$ M1 A1

$y = 2 + 3(\frac{5}{3}) - (\frac{5}{3})^2 = 4\frac{2}{9} \quad \therefore \ B\ (1\frac{2}{3}, 4\frac{2}{9})$ M1 A1 **(11)**

---

Total **(75)**

© *Solomon Press*

# Performance Record – C1 Paper L

| Question no. | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Topic(s) | indices | recur. relation | quad. formula | inequals | surds, integr. | straight lines | integr. | curve sketch, transform. | AP | diff., tangent | |
| Marks | 3 | 4 | 6 | 6 | 8 | 8 | 8 | 10 | 11 | 11 | 75 |
| Student | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

© *Solomon Press*