Mastering O-Level Additional Mathematics (4049) - 2-Page Exam Checklist

A fast, practical guide for Secondary 3/4 students and parents. Designed for quick action: what to study, how to practise, and what the exam rewards.

What SEAB expects (4049, 2026)	**Paper 1:** 2h 15m, 12-14 questions (up to 10 marks each), 90 marks (50%). **Paper 2:** 2h 15m, 9-11 questions (up to 12 marks each), 90 marks (50%). **Assessment focus:** AO1 techniques 35%, AO2 problem-solving in context 50%, AO3 reasoning/communication 15%. **Marking reality:** show essential working for method marks; relevant mathematical formulae are provided; non-exact answers to 3 s.f. (angles in degrees 1 d.p.) unless stated; use calculator pi (or pi = 3.142) unless asked for pi.

Priority checklist (do these in order)

[ ] Fix your algebra engine: factorise, expand, simplify, handle fractions and negative signs accurately.
[ ] Lock in core A-Math tools: quadratic modelling, discriminant logic, partial fractions, binomial expansion, log laws.
[ ] Build trig confidence: exact values, identities, R-form, solving trig equations with the correct interval/units.
[ ] Make calculus automatic: differentiation rules + chain rule; integration basics; kinematics links (s-v-a).
[ ] Practise like the exam: mixed-topic sets, timed, with full working (method marks).
[ ] Keep an error log: record mistake type, the correct method, and one follow-up question you can now do.
[ ] Weekly mock routine: 45-60 min timed practice + 45 min review (redo wrong questions without notes).

Syllabus map (4049 in one view)

Algebra	Geometry & Trigonometry	Calculus
Quadratics (max/min, models) Equations & inequalities (incl. tangency conditions) Surds Polynomials & partial fractions Binomial expansion (positive integer n) Exponential & logarithmic functions (graphs, models)	Trig functions, identities, equations (degrees/radians) Graphs of sin/cos/tan forms; amplitude/period Coordinate geometry (lines, circles; straight-line graphs from transformations) Proofs in plane geometry (incl. tangent-chord theorem)	Differentiation: product/quotient, chain rule, stationary points, tangents/normals, related rates, max/min Integration: definite integrals, area under curve, areas below x-axis, kinematics applications

Turn the assessment objectives into marks

AO1 (35%) - Standard techniques: drills for accuracy. Aim for 0 careless errors per page. Practise steps, not just final answers.
AO2 (50%) - Problems in context: train translation skills: diagram, define variables, set up equations, check units/constraints, interpret the answer.
AO3 (15%) - Reason/communicate: write crisp justifications (especially in identities/proofs, tangency, max/min arguments). Use correct notation and complete sentences when needed.

How to improve fast (the 'alpha' playbook)

If you have limited time, these habits give the biggest score jump per hour.

1) The 60/30/10 practice loop (weekly)

60% mixed topical practice (hard questions, exam style).
30% review: rewrite the solution cleanly, highlight the key step that unlocked the problem.
10% memory: flash cards for identities, standard forms, derivatives/integrals, and common transformations.

2) Common score leaks (checklist)

[ ] Algebra slips: sign errors, wrong factorisation, skipping brackets, mishandling fractions.
[ ] Missing domain/constraints: roots require non-negative radicand, logs require positive argument, denominators not zero.
[ ] Degrees vs radians: keep track of the mode and the unit requested.
[ ] Trig equations: solve in the correct interval and include all solutions.
[ ] Calculus: forgetting chain rule, mixing up product/quotient rules, missing +C, wrong limits, wrong area sign below x-axis.
[ ] Method marks lost: jumping to the answer with no essential working.

3) Time and exam technique

Aim for **about 1.5 minutes per mark** as a baseline. If you are stuck after 3 minutes, leave a clear trail (diagram, definitions, a first equation) and move on. Come back later with fresh eyes.
Always check: reasonableness (size/sign), units, and whether the answer matches the question (exact vs approximation).

4) Calculator rules and exam-day loadout

Use an approved calculator in both papers. Keep it exam-ready: clear stored text/formulae; no wireless features; no programmable functions (including numerical differentiation/integration); bring fresh batteries. The calculator must be silent and not shared during the exam.
Bring: 2 pens, pencil + eraser, ruler, protractor (if needed), simple compass, and your calculator (plus spare batteries).

References (official)

SEAB Singapore-Cambridge O-Level Additional Mathematics (Syllabus 4049) - examination in 2026.
SEAB Guidelines on the Use of Electronic Calculators in National Examinations and list of approved calculator models (updated 31 Oct 2025).