QCE Specialist Mathematics Formula Book

Original worked revision examples with notes on units and assumptions.

Use the board PDF below for the official sheet. Coverage of examples varies by subject.

Official reference material

QCAA Specialist Mathematics formula book

What to work out beyond the sheet

When solving for all complex roots, check the number and spacing of the arguments, then verify by substitution.

Formulas and worked examples

Vectors · dot product

Formula or reference: $u \cdot v = |u||v|\cos\theta$. In coordinates multiply matching components and add.

Units and conditions: Use θ between the two nonzero vectors.

Worked example: For $u = (2,1,2)$ and $v = (1,2,-2)$, $u \cdot v = 0$, so the vectors are perpendicular.

Complex numbers · powers in polar form

Formula or reference: Raise the modulus to the given integer power and multiply the argument by that power.

Units and conditions: Use one angle convention throughout.

Worked example: A number with modulus 2 and argument $\pi/6$ has cube $8i$.