




A2 Level Core 4

| | What You Need To Know |  |  |  |
|------------------------------------|--|---|---|---|
| 1. Algebra and Functions | <ul style="list-style-type: none"> • Rational functions • Simplification of rational expressions including factorising and cancelling. • Algebraic division and solving function involving algebraic fractions. • Partial Fractions | | | |
| 2. 2D Coordinate Geometry | <ul style="list-style-type: none"> • Knowledge of Cartesian and parametric equation of curves and conversion between the two forms. | | | |
| 3. Sequences and Series | <ul style="list-style-type: none"> • Binomial series for any ration power of n. • Series expansion of rational functions including the use of partial fractions. | | | |
| 4. Trigonometry | <ul style="list-style-type: none"> • Use the formulae for $\sin(A \pm B)$, $\cos(A \pm B)$ and $\tan(A \pm B)$. • Use expressions for $a \cos \theta + b \sin \theta$ in the equivalent form of $r \sin(\theta \pm \alpha)$ or $r \cos(\theta \pm \alpha)$. • Find solutions of trigonometric equation in a given interval. • Knowledge and use of double angle formulae and simple identities. | | | |
| 5. Exponentials and Logarithms | <ul style="list-style-type: none"> • Understand exponential growth and decay. | | | |
| 6. Differentiation and Integration | <ul style="list-style-type: none"> • Formation of simple differential equations, including in the context of growth and decay. • Analytical solution of simple first order differential equations with separable variable, including in application of practical problems. • Differentiation of simple functions defined implicitly or parametrically. This does not apply to 2nd order differentials. • Equations of tangents and normals for curves specified implicitly or in parametric form. • Simple cases of integration using partial fractions. | | | |
| 7. Vectors | <ul style="list-style-type: none"> • Understand vector in 2 and 3 dimensions. • Magnitude of vectors • Algebraic operations of vector addition and multiplication by scalars, and the geometrical interpretations. • Position vectors • The distance between two points. • Vector equations of lines. Including the intersection of two straight lines in 2 and 3 dimensions; and parallel lines. • The scalar product and its use for calculating the angle between two lines. | | | |