



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU



澳門理工學院
Instituto Politécnico de Macau
Macao Polytechnic Institute



旅遊學院
INSTITUTO DE FORMAÇÃO TURÍSTICA
Institute for Tourism Studies



澳門科技大學
UNIVERSIDADE DE CIÊNCIA E TECNOLOGIA DE MACAU
MACAU UNIVERSITY OF SCIENCE AND TECHNOLOGY

澳門四高校聯合入學考試（語言科及數學科）

**Joint Admission Examination for Macao Four Higher Education Institutions
(Languages and Mathematics)**

考試大綱 Syllabus

數學附加卷 Mathematics Supplementary Paper



考試時間：一小時

數學科附加卷的考試大綱包括數學科考試大綱的內容，並加上：

1. 函數：函數的概念、定義域及值域。圖。反函數。
2. 立體幾何：簡易立體圖形，包括長方體、角柱、圓柱、角錐、直立圓錐、球體。
3. 線性方程組：不多於三個未知量。 $n \times n$ 矩陣；矩陣加法及乘法 ($n \leq 3$)。行列式（階數不大於三）。
4. 解析幾何：切線與法線。極座標。
5. 三角：三角函數方程及其通解。
6. 基本微積分：多項式的和、差、積、商的微分法。極大值、極小值及拐點。多項式的不定積分。不定積分和定積分的簡易性質。利用定積分計算面積。
7. 曲線的描繪：偶、奇及週期函數。導數的應用。
8. 向量：純量與二維空間中的向量；向量加法及純量乘法。位置向量。笛卡兒分量。純量積。
9. 複數：虛數。複數的運算。二次多項式的複根。複數的極式。有理指數的棣美弗定理。 n 次根。



Examination Duration: 1 hour

The syllabus of the Mathematics Supplementary Paper includes the contents in the Mathematics Examination Syllabus, together with:

1. Functions: Concept of function, domain and range. Graphs. Inverse functions.
2. Solid Geometry: Simple solid figures, including rectangular block, prism, cylinder, pyramid, right circular cone and sphere.
3. System of Linear Equations: No more than three unknowns. $n \times n$ matrices: addition and multiplication of matrices ($n \leq 3$). Determinants (up to order 3).
4. Coordinate Geometry: Tangent and normal. Polar coordinates.
5. Trigonometry: Trigonometric equations and general solutions.
6. Basic Calculus: Differentiation of a sum, a difference, a product, and a quotient of polynomials. Maxima, minima and inflection points. Indefinite integral of polynomials. Simple properties of indefinite integrals and definite integrals. Area by integration.
7. Curve Sketching: Even, odd and periodic functions. Application of derivatives.
8. Vectors: Scalars and vectors in 2-dimensional space; vector addition and scalar multiplication. Position vectors. Cartesian components. Scalar product.
9. Complex Numbers: Imaginary numbers. Manipulation of complex numbers. Complex roots of quadratic equations. Polar form of complex numbers. De Moivre's theorem for rational indices. n -th root.