



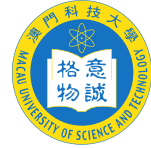
澳門大學  
UNIVERSIDADE DE MACAU  
UNIVERSITY OF MACAU



澳門理工大學  
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Macao Polytechnic University



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

**2025 年澳門四高校聯合入學考試（語言科及數學科）**

**2025 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。

## 附錄--數學符號

除了數學正卷所用到的符號外，數學附加卷亦會採用以下符號：

$f^{-1}(x)$	函數 $f(x)$ 的反函數。
$\overrightarrow{AB}$	從點 $A$ 到點 $B$ 的向量。
$ \overrightarrow{AB} $	$\overrightarrow{AB}$ 的大小 (長度)。
$\overrightarrow{AB} \cdot \overrightarrow{CD}$	$\overrightarrow{AB}$ 與 $\overrightarrow{CD}$ 的純量積。
$ A $	方陣 $A$ 的行列式。
$\frac{dy}{dx}, \frac{d^2y}{dx^2}$	$y$ 的一階及二階導數。
$f'(x), f''(x)$	$f(x)$ 的一階及二階導數。
$\int f(x) dx$	$f(x)$ 的不定積分。
$\int_a^b f(x) dx$	$f(x)$ 在區間 $[a, b]$ 上的定積分。
$\operatorname{Re}(z), \operatorname{Im}(z),  z , \arg(z), \bar{z}$	複數 $z$ 的實部、虛部、模、幅角及共軛。

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.

## Appendix – Mathematical Symbols

In addition to those notations used in the Mathematics Standard Paper, the Mathematics Supplementary Paper adopts the following notations:

$f^{-1}(x)$	Inverse function of the function $f(x)$ .
$\overrightarrow{AB}$	Vector from point $A$ to point $B$ .
$ \overrightarrow{AB} $	Magnitude (length) of $\overrightarrow{AB}$ .
$\overrightarrow{AB} \cdot \overrightarrow{CD}$	Scalar product of $\overrightarrow{AB}$ and $\overrightarrow{CD}$ .
$ A $	Determinant of the square matrix $A$ .
$\frac{dy}{dx}, \frac{d^2y}{dx^2}$	First and second derivatives of $y$ .
$f'(x), f''(x)$	First and second derivatives of $f(x)$ .
$\int f(x) dx$	Indefinite integral of $f(x)$ .
$\int_a^b f(x) dx$	Definite integral of $f(x)$ over interval $[a, b]$ .
$\operatorname{Re}(z), \operatorname{Im}(z),  z , \arg(z), \bar{z}$	The real part, imaginary part, modulus, argument, and conjugate of the complex number $z$ .