

IGCSE 附加數學 0606 Paper 1 模擬卷

IGCSE 數學 | 時限：120 分鐘 | 總分：80 分 | 共 10 題

甲部 代數、對數與圓弧量度 (36 分)

全部題目必須作答，須展示步驟；除另有指明外，答案須準確至三位有效數字。

- (a) Simplify $\sqrt{50} + \sqrt{18} - \sqrt{8}$, giving your answer in the form $k\sqrt{2}$. (b) Evaluate $27^{(2/3)}$. (c) Show that $6 \div (\sqrt{5} - 1) = 3(\sqrt{5} + 1) \div 2$.
- (a) Express $f(x) = 2x^2 - 12x + 7$ in the form $a(x - h)^2 + k$ and state the minimum value of f . (b) Solve $f(x) = 0$, giving your answers in surd form.
- $p(x) = x^3 + ax^2 + bx - 6$, where a and b are constants. $(x - 1)$ is a factor of $p(x)$, and $p(x)$ leaves a remainder of 12 when divided by $(x + 2)$. (a) Find the values of a and b . (b) Factorise $p(x)$ completely.
- (a) Solve $\log_2 (x + 3) + \log_2 (x - 3) = 4$. (b) Solve $3^{(2x - 1)} = 5$, giving x correct to 3 significant figures.
- A sector OAB of a circle has radius 9 cm and angle $AOB = 1.2$ radians. Find (a) the length of the arc AB, (b) the area of the sector, (c) the area of the minor segment cut off by the chord AB, correct to 2 decimal places.

乙部 三角、二項式、排列組合、向量與微積分 (44 分)

全部題目必須作答；數值答案須準確至三位有效數字，角度以弧度表示者另予指明。

- (a) Express $3 \sin \theta + 4 \cos \theta$ in the form $R \sin(\theta + \alpha)$, where R and α are positive constants and α is in radians, and state the maximum value of $3 \sin \theta + 4 \cos \theta$. (b) Hence solve $3 \sin \theta + 4 \cos \theta = 2$ for $0 \leq \theta \leq 2\pi$, giving your answers correct to 3 significant figures.
- (a) Find the coefficient of x^3 in the expansion of $(2 + x/3)^6$. (b) Find the coefficient of x^4 in the same expansion. (c) State the constant term.
- A committee of 5 is chosen from 6 boys and 5 girls. (a) How many committees contain exactly 3 girls? (b) If a committee of 5 is chosen at random, find the probability that it contains exactly 3 girls. (c) How many committees contain more girls than boys?
- Relative to an origin O, the position vectors of A and B are $a = 3i - j + 2k$ and $b = i + 4j - k$. Find (a) $a \cdot b$, (b) the exact values of $|a|$ and $|b|$, (c) the angle between a and b in degrees correct to 1 decimal place, (d) a unit vector parallel to $a - b$, in exact form.
- A particle moves in a straight line so that its displacement s metres from a fixed point O at time t seconds is $s = t^3 - 6t^2 + 9t$ for $t \geq 0$. (a) Find an expression for the velocity and the times at which the particle is instantaneously at rest. (b) Find the acceleration at $t = 2$ s. (c) Find the total distance travelled in the first 4 seconds.

