IQM3004

LEVEL 3 · CONTROLLED ASSESSMENT

INTO QUALIFICATIONS

Mathematics

Component 2: Paper 2 written examination

Formula sheet

Duration
3 hours

Total marks
150

Assessment window
Sample assessment

Assessment set
Set S of 2026

Audience
Candidates

Release timing
exam release

Exam date
_____

Assessment set ID
2026-S

The following formulae are provided. All other results are expected to be known.

Algebra

Quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Binomial: $(a+b)^n = \sum_{r=0}^{n} \binom{n}{r} a^{n-r} b^r$

Arithmetic series: $S_n = \frac{n}{2}[2a + (n-1)d]$

Geometric series: $S_n = \frac{a(1-r^n)}{1-r}$; $S_\infty = \frac{a}{1-r}$ for $|r| < 1$

Change of base: $\log_a x = \frac{\log_b x}{\log_b a}$

Trigonometry

Arc length: $s = r\theta$

Sector area: $A = \frac{1}{2} r^2 \theta$

Segment area: $A = \frac{1}{2} r^2 (\theta - \sin\theta)$

Identity: $\sin^2\theta + \cos^2\theta = 1$

Area of a triangle: $A = \frac{1}{2} a\, b \sin C$

Exact trigonometric values

θ: $0, \pi/6, \pi/4, \pi/3, \pi/2$

$\sin\theta$: $0, 1/2, \sqrt{2}/2, \sqrt{3}/2, 1$

$\cos\theta$: $1, \sqrt{3}/2, \sqrt{2}/2, 1/2, 0$

$\tan\theta$: $0, 1/\sqrt{3}, 1, \sqrt{3}$, undefined

Trigonometric addition and approximation

$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$

For small θ in radians: $\sin\theta \approx \theta$; $\cos\theta \approx 1 - \theta^2/2$; $\tan\theta \approx \theta$

Differentiation and integration

$\frac{d}{dx}(\tan kx) = k\, sec^2 kx$

$\frac{d}{dx}(sec\, x) = sec\, x \tan x$

Quotient rule: $\frac{d}{dx}\left(u/v\right)=\frac{v\frac{du}{dx}-u\frac{dv}{dx}}{v^2}$

Integration by parts: $\int u\frac{dv}{dx}\ dx=uv-\int v\frac{du}{dx}\ dx$

Numerical methods

Newton–Raphson: $x_{n+1}=x_n-\frac{f\left(x_n\right)}{f'\left(x_n\right)}$

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Paper P2	**Assessment set** Sample 2026 · ID 2026-S