Exercise 1

Paper 1 style · No calculator

1 5 marks SL 3.5 ●○○ Routine

The point P lies on the unit circle, and the angle from the positive x-axis to OP is $\frac{2\pi}{3}$.

(a) Write down the exact coordinates of P. **[2]**

(b) Find the exact value of $\tan\frac{2\pi}{3}$. **[2]**

(c) Write down another value of α, $0 \leq \alpha \leq 2\pi$, such that $\sin\alpha = \sin\frac{2\pi}{3}$. **[1]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
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MARKSCHEME (a)

$x = -\frac{1}{2}$ **A1**

$y = \frac{\sqrt{3}}{2}$ **A1**

Total 2 marks

MARKSCHEME (b)

$\frac{\sqrt{3}/2}{-1/2}$ **M1**

$-\sqrt{3}$ **A1**

Total 2 marks

MARKSCHEME (c)

$\frac{\pi}{3}$ **A1**

Total 1 mark