# Exercise 1

Paper 1 style · No calculator

## 1 6 marks AHL 3.10 · 3.11 ●●○ Typical

The angles $A$ and $B$ are acute, with $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$.

**(a)** Find the value of $\tan(A + B)$. **[2]**

**(b)** Hence find the exact value of $A + B$. **[2]**

**(c)** Find the value of $\tan 2A$. **[2]**

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**(b)** Hence find the exact value of $A+B$. **[2]**

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**MARKSCHEME (a)**

$\dfrac{\frac{1}{2}+\frac{1}{3}}{1-\frac{1}{2}\times\frac{1}{3}}$ **M1**

$\tan(A+B)=1$ **A1**

Total 2 marks

**MARKSCHEME (b)**

$0 < A+B < \pi$ and $\tan(A+B) > 0$, so $A+B$ is acute **R1**

$A+B=\dfrac{\pi}{4}$ **A1**

Total 2 marks

**MARKSCHEME (c)**

$\dfrac{2\times\frac{1}{2}}{1-\left(\frac{1}{2}\right)^2}$ **M1**

$\tan 2A=\dfrac{4}{3}$ **A1**

Total 2 marks