Section 2: Applications of de Moivre's theorem

Crucial points

1. **Make sure you know the expressions for sin θ and cos θ**

   The relationships $\cos n\theta = \frac{z^n + z^{-n}}{2}$ and $\sin n\theta = \frac{z^n - z^{-n}}{2\mathrm{i}}$ are fundamental to this work.

2. **Make sure you know the definition of $\mathrm{e}^{\mathrm{i}\theta}$**

   $\mathrm{e}^{\mathrm{i}\theta} = \cos\theta + \mathrm{i}\sin\theta$

3. **Make sure you can work comfortably with both the exponential and modulus-argument forms**

   Sometimes it is better to use the former and sometimes it's better to use the latter, you need to be comfortable with both.