

In complex analysis find  $\cos(5i + 3)$ . [103 中正光電 5]

$$\begin{aligned} \text{[解]} \cos(5i + 3) &= \cos 5i \cos 3 - \sin 5i \sin 3 = \frac{e^{i(5i)} + e^{-i(5i)}}{2} \cdot \cos 3 - \frac{e^{i(5i)} - e^{-i(5i)}}{2i} \cdot \sin 3 \\ &= \frac{e^{-5} + e^5}{2} \cdot \cos 3 - \frac{e^{-5} - e^5}{2i} \cdot \sin 3 = \cosh 5 \cos 3 - i \sinh 5 \sin 3 \end{aligned}$$



南臺科技大學

Southern Taiwan University of Science and Technology