

### Practice Exercise Lecture 9

- Q1.** Prove that  $\sin iy = i \sinh y$ .  
(Hint: Use  $\sin y = \frac{e^{iy} - e^{-iy}}{2i}$ )
- Q2.** Prove that  $\cosh iy = \cos z$ .  
(Hint. Use  $\cosh y = \frac{e^y + e^{-y}}{2}$ )
- Q3.** Prove that  $\cosh^2 x - \sinh^2 x = 1$ .