

A prerequisite for this class is the ability to quickly manipulate complex numbers while doing calculations. Please make sure you can answer the following questions:

- a) Write $e^{i\frac{3\pi}{4}}$ as the sum of a purely real and purely imaginary number
[Hint: Google "Euler's Formula"]
- b) Write $\sqrt{2} e^{-i\pi/4}$ as the sum of a purely real and purely imaginary number.
- c) For parts a & b, plot these complex numbers on the Argand plane.
- d) Write $2+i$ as a complex exponential
- e) Use Euler's formula to simplify the expression
$$e^{i\phi} + e^{-i\phi}$$
- f) Use Euler's formula to simplify the expression
$$e^{i\phi} - e^{-i\phi}$$