Review of Complex Numbers

We define the symbol $i = \sqrt{-1}$ or $i \bullet i = -1$.

Cartesian representation

$z = x + i\,y$

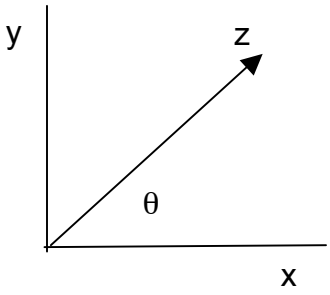
$x = \mathrm{Re}\{z\}$ and $y = \mathrm{Im}\{z\}$

Polar representation

$z = |z|\, e^{i\theta}$

$|z| = \sqrt{x^2 + y^2}$

$\theta = \tan^{-1}(y/x)$



Problems:

1) Find the magnitude and phase of

$$z = \frac{10}{4 + 3i}$$

$$z = \frac{1 + i}{1 - i}$$

2) Sketch in polar form

$$z = \frac{10}{4 + 3i}$$

$$z = \frac{1 + i}{1 - i}$$

3) Let $|Z|\, e^{i\theta}$. Find the magnitude and phase of Z.

$$Z = \frac{-i/\omega C}{\omega L - i/\omega C}$$