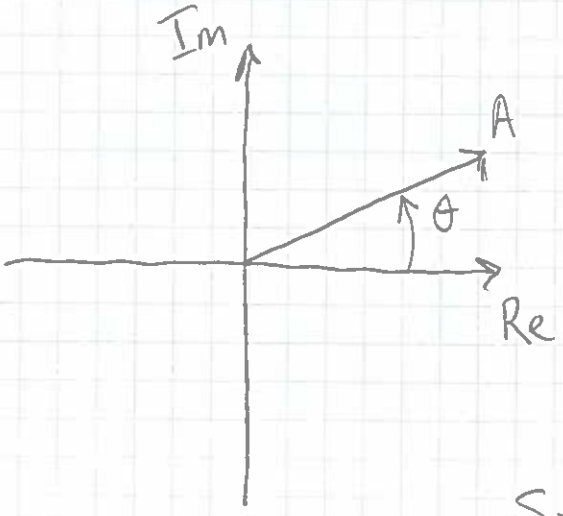
5) Express quantities below in exponential notation, of the form

$$A e^{i\theta} = \underbrace{A\cos\theta}_{\text{real}} + \underbrace{i A\sin\theta}_{\text{imaginary}}$$

"x" "y"



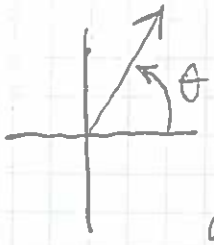
We can interpret the real part as the "x" coord in complex plane, and imaginary part as "y" coord.

So, we can use the real + imag parts to find A and θ like so:

$$A = \sqrt{(\text{Real})^2 + (\text{Imag})^2}$$

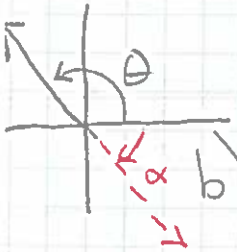
$$\theta = \tan^{-1}\left(\frac{\text{Imag}}{\text{Real}}\right)$$

but be careful to choose the proper quadrant



a) $10 + i19 \Rightarrow A = \sqrt{10^2 + 19^2} = 21.47$

$\theta = \tan^{-1}\left(\frac{19}{10}\right) = 1.086$ rad

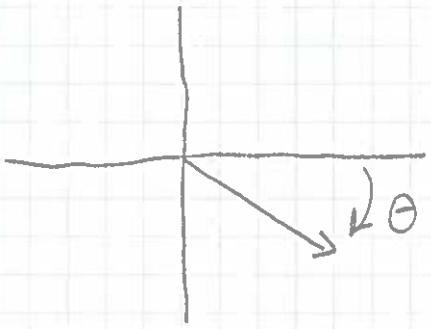


b) $-8.0 + i9.6 \Rightarrow A = \sqrt{(-8.0)^2 + (9.6)^2} = 12.50$

$\theta = \tan^{-1}\left(\frac{9.6}{-8.0}\right) = 2.26$ rad

Do not pick the angle $\alpha = -0.88$ rad shown here; it is in the wrong quadrant.

5) c) $7.9 - i6.4$



$$A = \sqrt{(7.9)^2 + (-6.4)^2} = 10.2$$

$$\theta = \tan^{-1}\left(\frac{-6.4}{7.9}\right) = -0.68 \text{ rad}$$