Instructions

(i) Recall that $a + bj = \sqrt{a^2 + b^2}\, e^{j \arctan(b/a)}$

(ii) $|a + bj| = \sqrt{a^2 + b^2}$ is the magnitude

(iii) $\angle(a + bj) = \arctan(b/a)$ is the phase

(iv) Recall Euler's formula is $e^{j\theta} = \cos\theta + j\sin\theta$
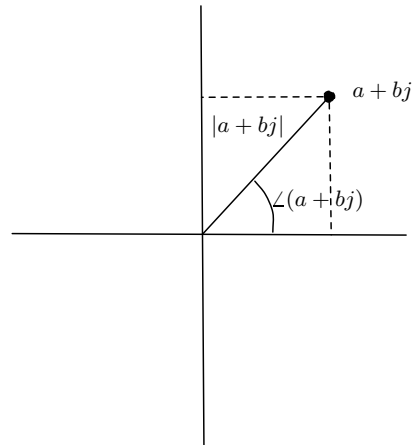
1. Compute the magnitude and phase of the complex numbers $1 + j$ and $1 - j$

2. Using your answer to Question 1, compute the magnitude and phase of

$$\frac{1 + j}{1 - j}$$

3. Match the numbers in the first column with the numbers in the second one

$$
\begin{array}{cc}
j & e^{-j\pi} \\
-1 & e^{j\frac{\pi}{6}} \\
\frac{\sqrt{3}}{2} + \frac{j}{2} & e^{j\frac{\pi}{2}}
\end{array}
$$