Complex Numbers

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

Definition 0.1. A *complex number* is an expression of the form $a + bi$ where a and b are real numbers and $i^2 = -1$.

1. Identify which of the following are complex numbers: $\frac{\pi}{3} + \sqrt{2}i$ $\quad 3i$ $\quad 1$

2. Complex numbers behave in much the same way polynomials do (with the caveat that $i^2 = -1$. Compute:

   $(2 + 3.14x) - (7 - x)$ $\quad (1 + 5x)(2 - x)$

3. Now consider complex numbers (don't forget that $i^2 = -1$. Compute:

   $(2 + 3.14i) - (7 - i)$ $\quad (1 + 5i)(2 - i)$

4. The complex plane uniquely identifies all the complex numbers

   For example, the number $-2.5 + 4i$ corresponds to the point 2.5 units to the left of the i-axis, and 4 units above the $\mathbb{R}$-axis.

   Write down the complex number for:

   (a) A

   (b) B