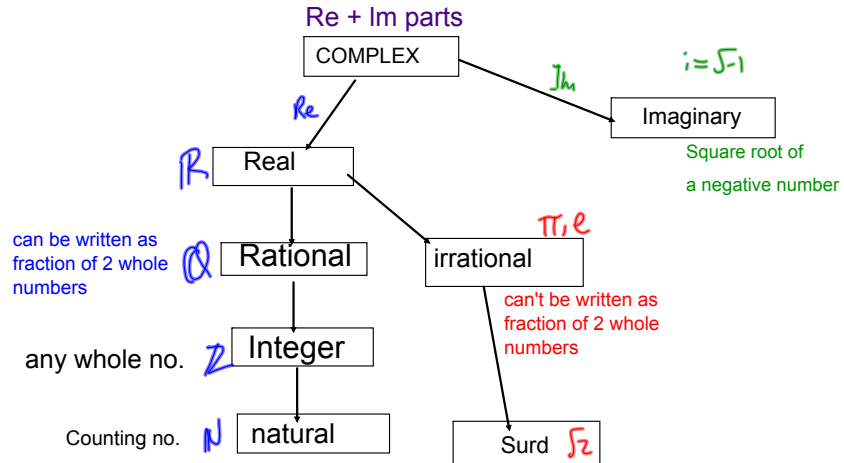


Number System Hierarchy

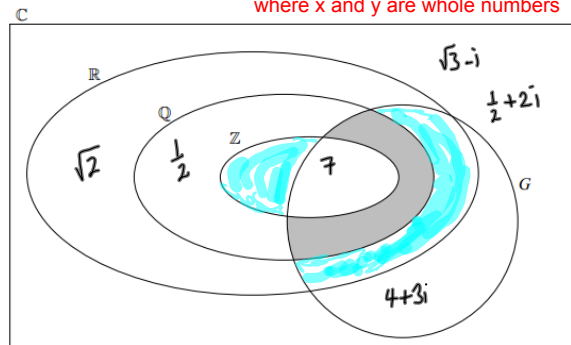


Let G be the set $\{x + yi \mid x, y \in \mathbb{Z}, i^2 = -1\}$.

Consider the Venn diagram below.

$G =$ Complex numbers where $x + yi$ where x and y are whole numbers

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(a) There are three regions in the diagram that represent empty sets. One of these is shaded. Shade in the other two.

(b) Insert each of the following numbers in its correct region on the diagram.

- | | | |
|------------|---------------|--------------------|
| $\sqrt{2}$ | 7 | $\sqrt{3} - i$ |
| $4 + 3i$ | $\frac{1}{2}$ | $\frac{1}{2} + 2i$ |