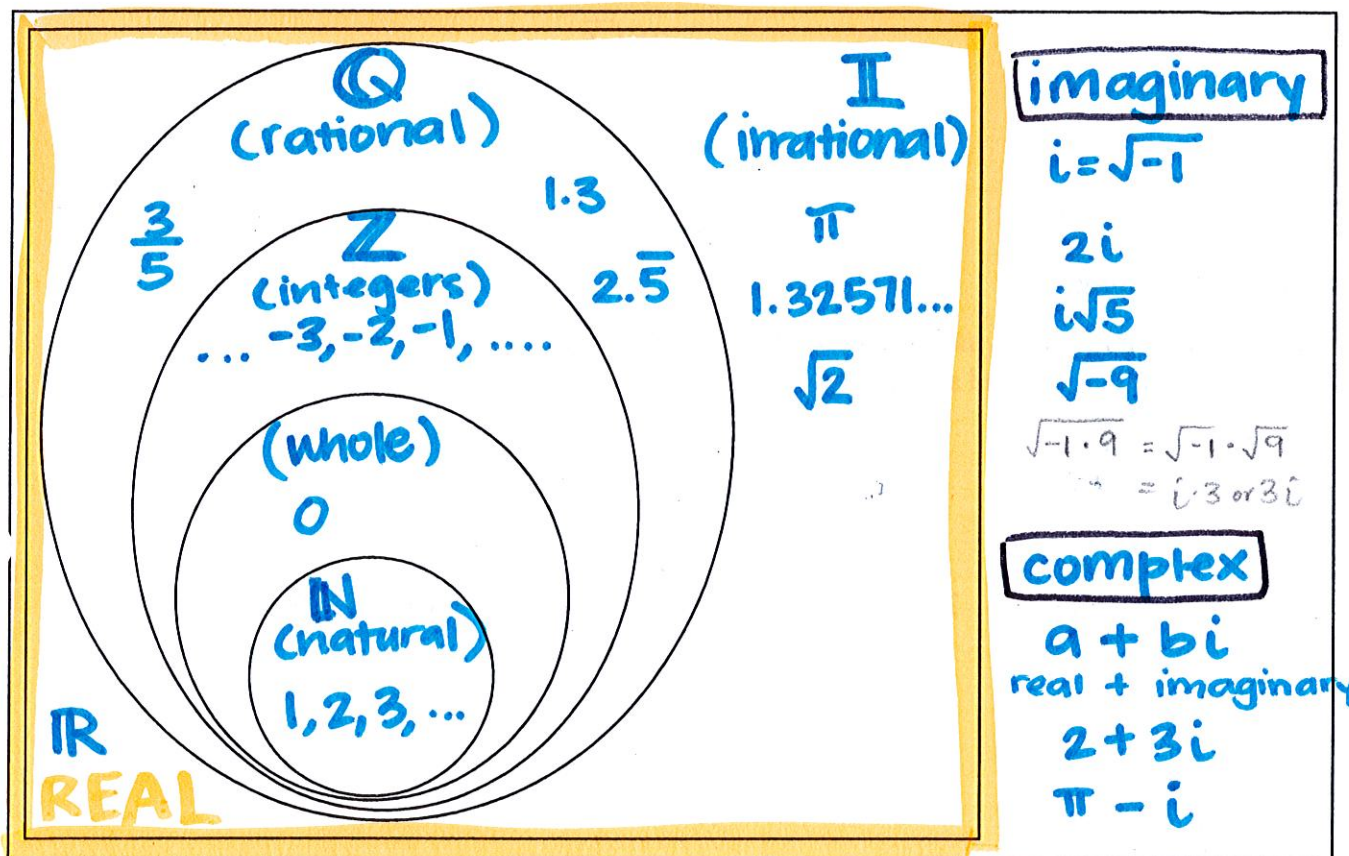


1.5A Real vs Imaginary Numbers Notes

You have been told in the past that you are not allowed to have a negative number under a square root.

This isn't always true. There is another set of numbers that are called the imaginary numbers. This system includes all even indexed radicals with a negative radicand.



This system uses the lowercase letter i to represent the negative under a radical.

$$i = \sqrt{-1}$$

These radicals are rewritten by making the number positive, simplifying the radical if possible, and putting the i in front of the radical. The i goes after the number if it is a perfect square

Ex.

$$1. \sqrt{-4} = \sqrt{-1} \cdot \sqrt{4} = i \cdot 2 = 2i$$

$$2. \sqrt{-36} = 6i$$

$$3. \sqrt{-3} = \sqrt{-1} \cdot \sqrt{3} = i\sqrt{3}$$

$$4. \sqrt{-24} = i\sqrt{24} = i \cdot 2\sqrt{6} = 2i\sqrt{6}$$

$$\begin{array}{c} 24 \\ \wedge \quad \wedge \\ 4 \quad 6 \\ \wedge \quad \wedge \\ (2) \quad 2 \quad 3 \\ \wedge \quad \wedge \\ 2 \quad 3 \\ \hline 2\sqrt{6} \end{array}$$