Variable x, y, z, t

Constants — Definite constants $5, 6, 8, \ldots$

Arbitrary constants $a, b, c, d, \ldots$

Mathematical operations.

Algebraic operations. $-, +, \div, \times$

Algebraic Expression :- $2x + 5$ ✓ ✓ ✓

$3x + 7$

$2x^4 - 3y + z$

Equation $2x + 5 = 0$ Equation

Exp $x + 1 = 0$ ✗ true for $x = 1$

$-1 + 1 = 0$

x ✓ Solution of the equation.

$x^0 = 1$

An algebraic expression is called an equation if it is satisfied for certain values of the variable.

Examples. 1) $x + 5 = 0$ Linear equation

2) $x^2 + 5x + 6 =$ Quadratic eq.

3) $x^3 - 1 = 0$ Cubic eq.

Identity Formula

$(a+b)^2 = a^2 + 2ab + b^2$

or $(x+1)^2 = x^2 + 2x + 1$

It is true for all values of the variable.

:)

Family of Numbers

$3+7i$, $6-\frac{2}{3}i$

Complex Numbers

$(\sqrt{-4})^2 =$

Real Numbers

Imaginary No.

6.2156666.....

0.5

$0, \frac{5}{2}, -\frac{6}{7}$

$\sqrt{4}=2$

7.9 Rational Nos.

3.51620193..... $\sqrt{2}=1.41$.....

Irrational Numbers $-\sqrt{3}, \sqrt{5}$

$\pi = 3.14159265$.....

Integers ..., -2, -1, 0, 1, 2, 3, ...

Fractions $\frac{6}{7}, \frac{-5}{3}, \ldots \frac{7}{3}$

Positive Nos. (Natural integers) $1, 2, 3, \ldots$ or $+1, +2, +3, \ldots$

Zero 0

Negative Integers. $-1, -2, -3, \ldots$

Zero is a number which has no value, it can neither be positive nor Negative.

Whole Nos. $0, 1, 2, 3, \ldots$

$\frac{5}{0}$ → Not a number

→ ∞ (infinity) →

$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$

Imaginary Nos.

$$\sqrt{-4} = \sqrt{4(-1)}$$

$$= \sqrt{4} \cdot \sqrt{-1}$$

$= 2\,(\sqrt{-1})$ → iota

$i = \sqrt{-1}$

Exps

$$\sqrt{-6} = \sqrt{6}\, i$$

$$\sqrt{-25} = \sqrt{25}\, i$$

$$= 5i$$

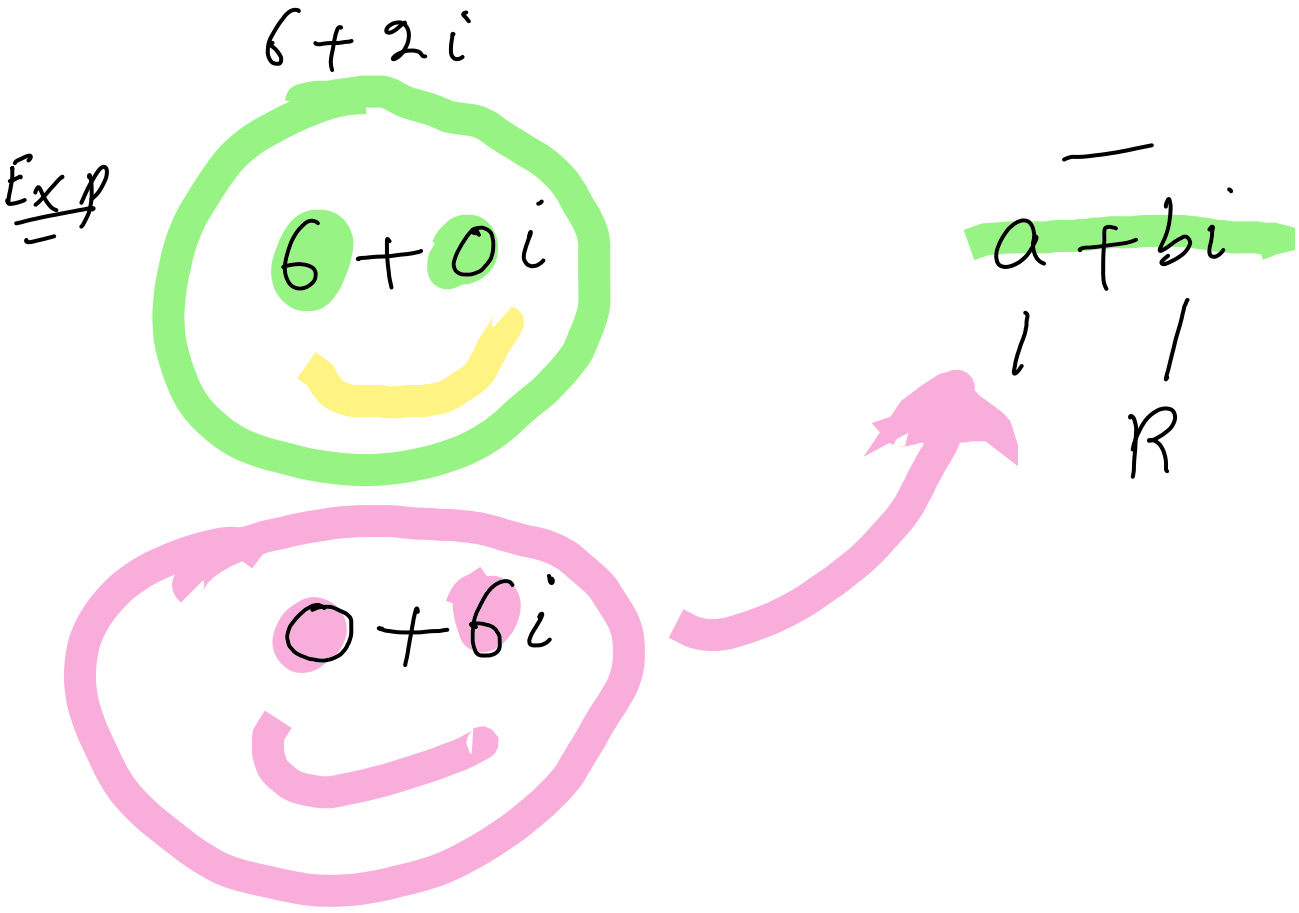
Complex Nos.

Any number of the form "$a+ib$" is a complex No.

where a & b are real nos.

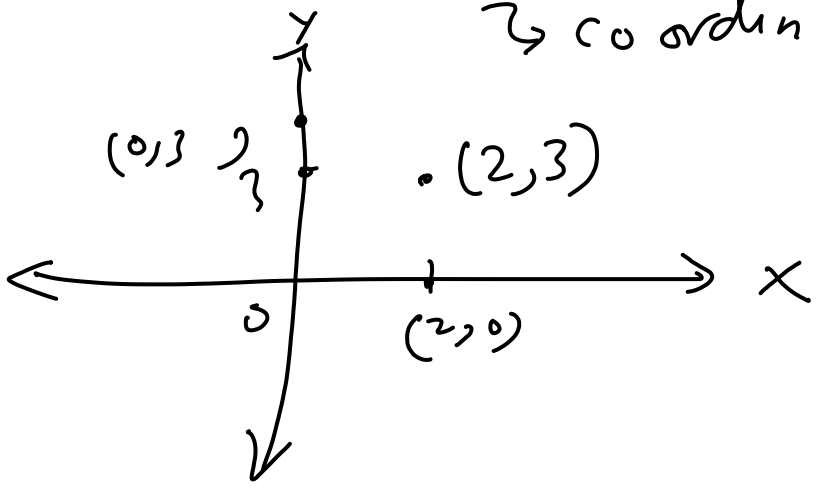
Exp $3+7i$ $\quad\quad$ $\sqrt{3}-5i$

Exp



Note Every complex # $a+ib$ can be written as (a,b).

Exp $2+3i = (2,3)$ → coordinate



	Real	Rational	Irrational	Integer	Complex
7	✓	✓	✗	✓	✓
6	✓	✓	✗	✓	✓
$-5/2$	✓	✓	✗	✗	✓
$\sqrt{3}$	✓	✗	✓	✗	✓
0	✓	✓	✗	✓	✓