

René Descartes

The Greatest Mathematician of the 17th Century

Childhood

- ▣ Born: March 31st, 1596
 - LaHaye Touraine
- ▣ Died: Feb. 11th, 1650
- ▣ Father – judge
- ▣ Mother – sick
- ▣ Homeschooled

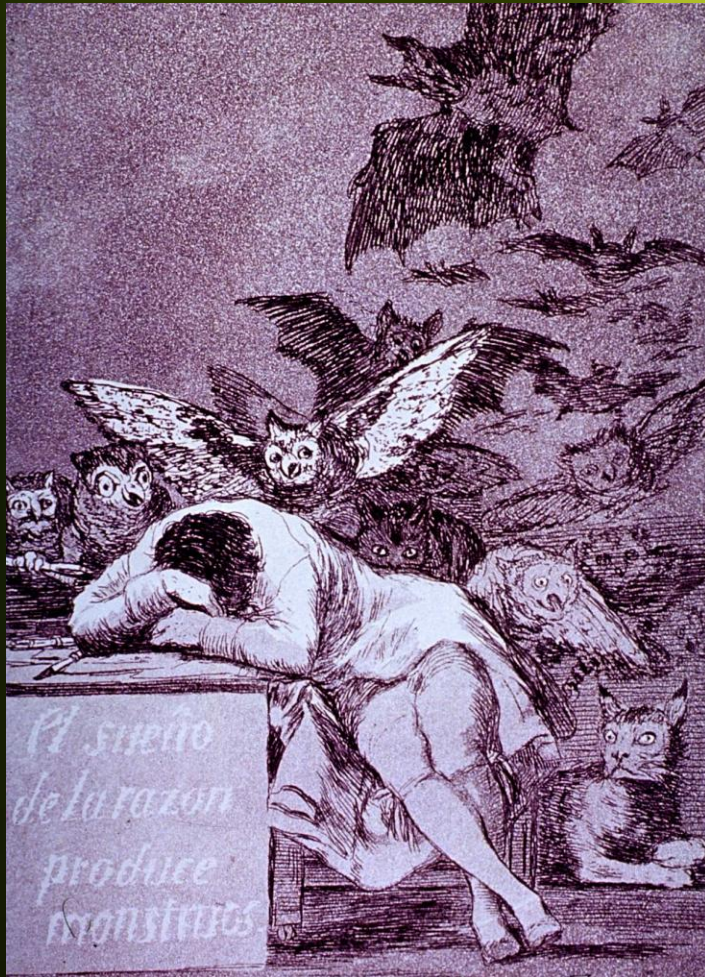


Life After College

- ▣ 1617 – received law degree
- ▣ Paris – questioned life
- ▣ Solution – travel
- ▣ Joined Dutch army
- ▣ Isaac Beeckman
- ▣ Core beliefs



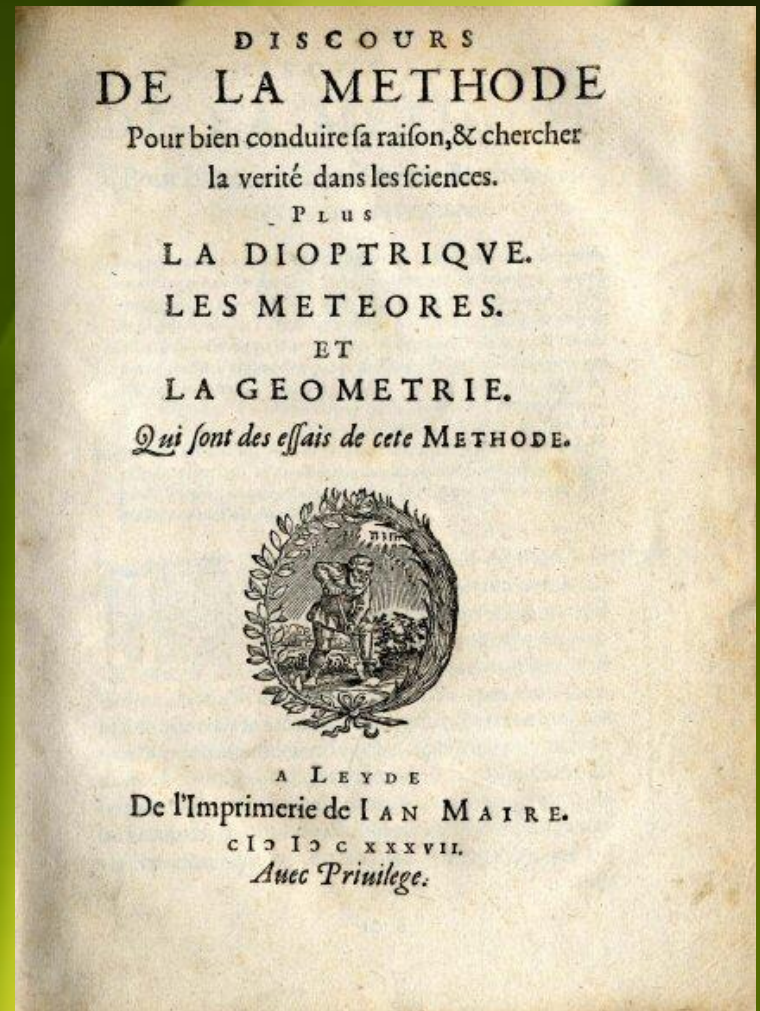
Descartes' Three Dreams



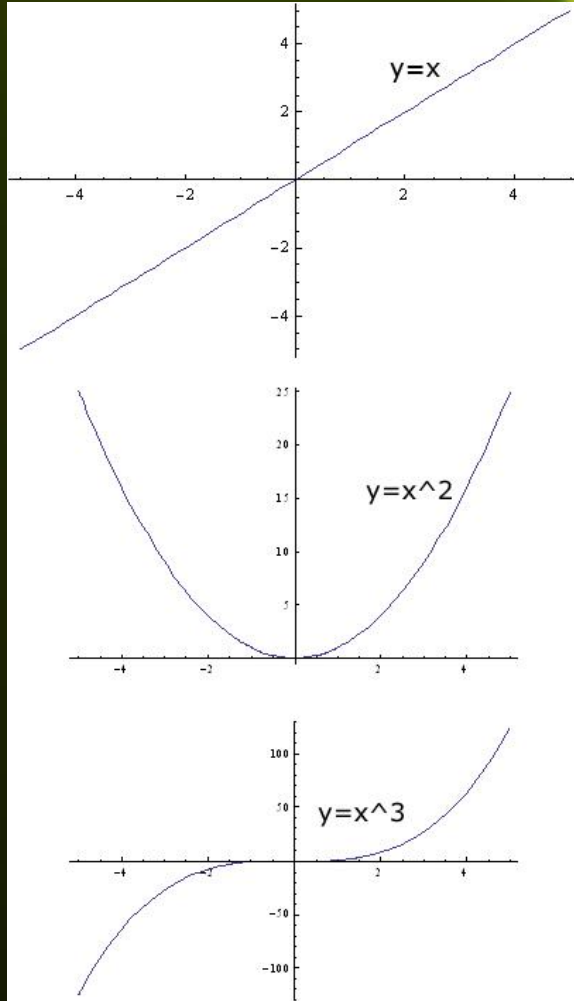
- ▣ Nov. 10th, 1619
- ▣ Prior days - isolated
- ▣ Dream 1 - the wind
- ▣ Dream 2 - lightning
- ▣ Dream 3 - a stranger
- ▣ Effect of the dreams

Scientific Method

- ❑ Wanted to rebuild a new system of truth
- ❑ 1st – recognize truth
- ❑ 2nd – divide difficulty
- ❑ 3rd – think orderly
- ❑ 4th – make enumerations complete
- ❑ Believed this method could lead to the unification of all knowledge

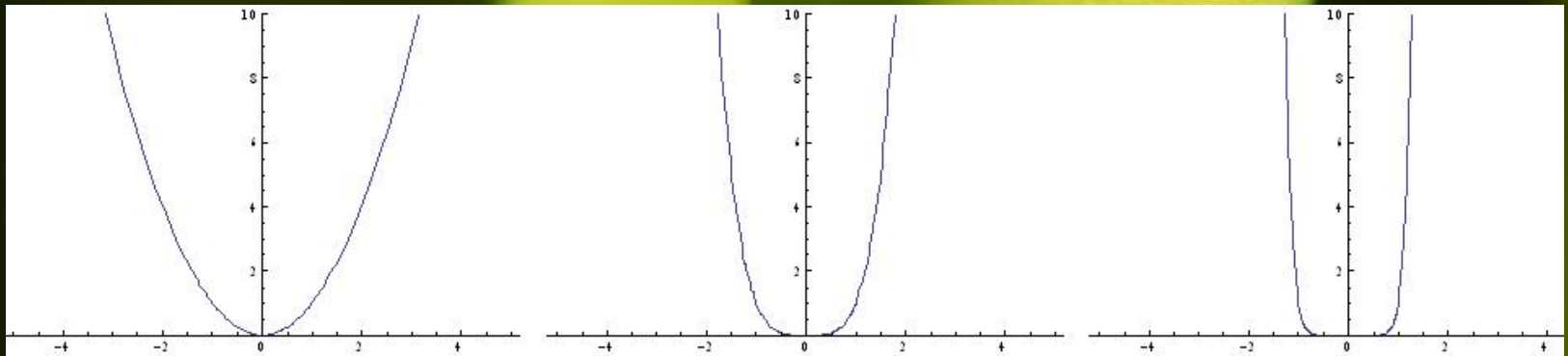
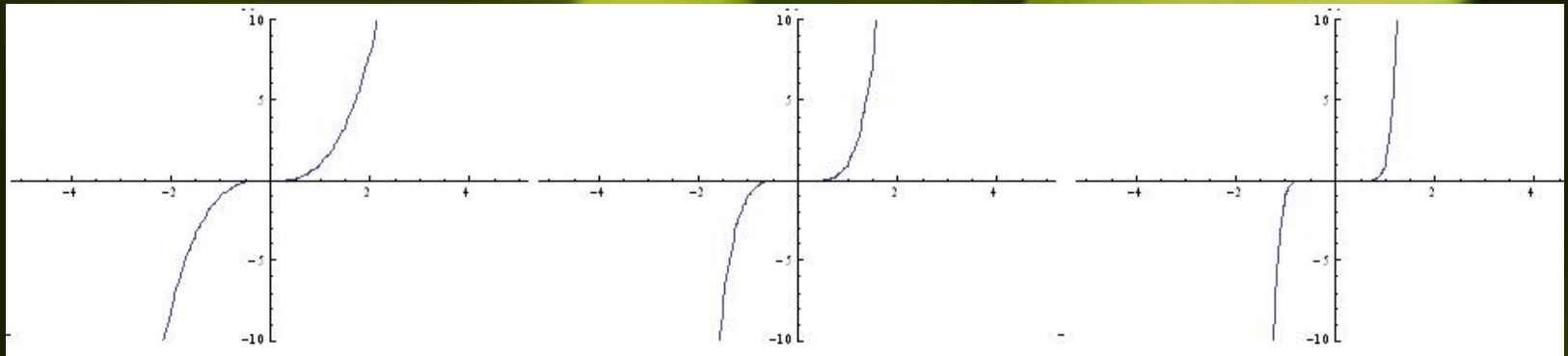


Investigation of Powers



- ▣ Powers could be represented as lines or curves
- ▣ Notion of exponents
- ▣ Using letters as variables
- ▣ Higher degree, more complex curve

Investigation of Powers



Descartes' Rule of Signs

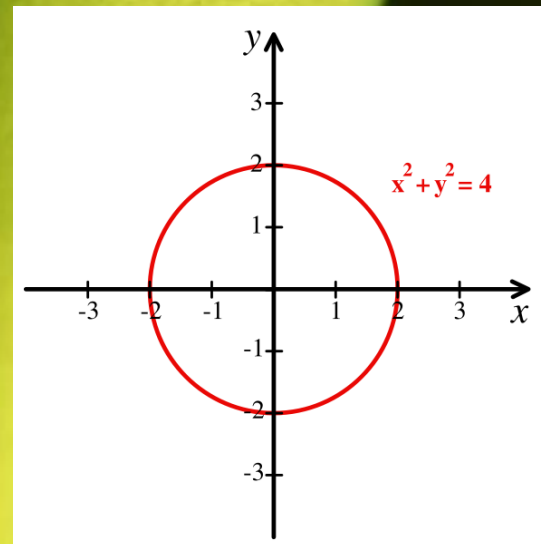
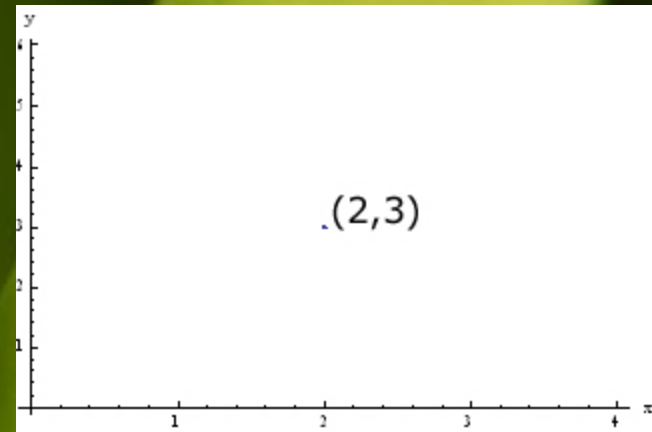
$$-x^3 + x^2 + x - 1.$$

$$x^3 + x^2 - x - 1$$

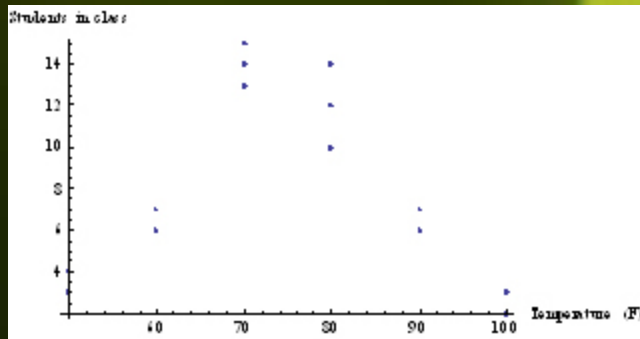
- ▣ Counting possible zeros
- ▣ Number of sign changes is equal to number of possible roots in a polynomial

Cartesian Coordinates

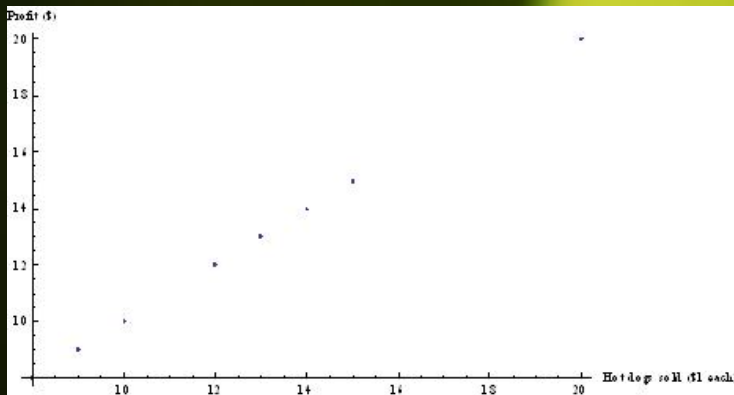
- ▣ Rectangular coordinate system
- ▣ Algebraic ideas expressed geometrically
- ▣ Calculus
- ▣ Example: $(2,3)$
- ▣ See things about mathematical ideas



Opening Math

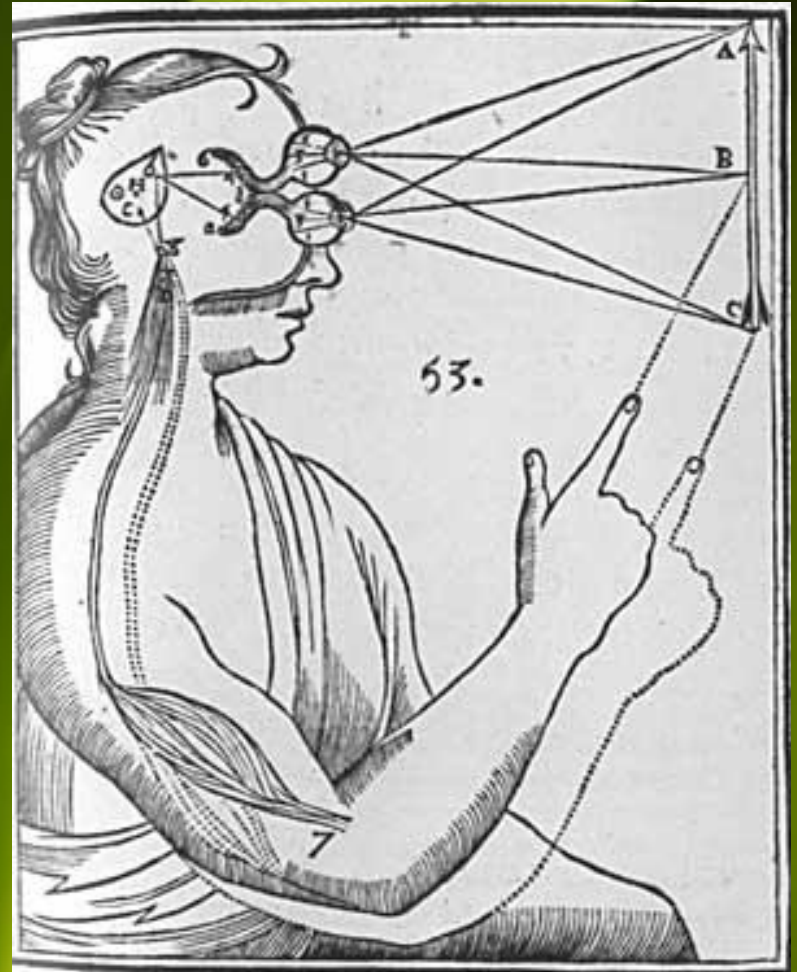


- ▣ Math for everyone
- ▣ Allowed non-academic ideas to be visualized
- ▣ Helped people understand what mathematics represented

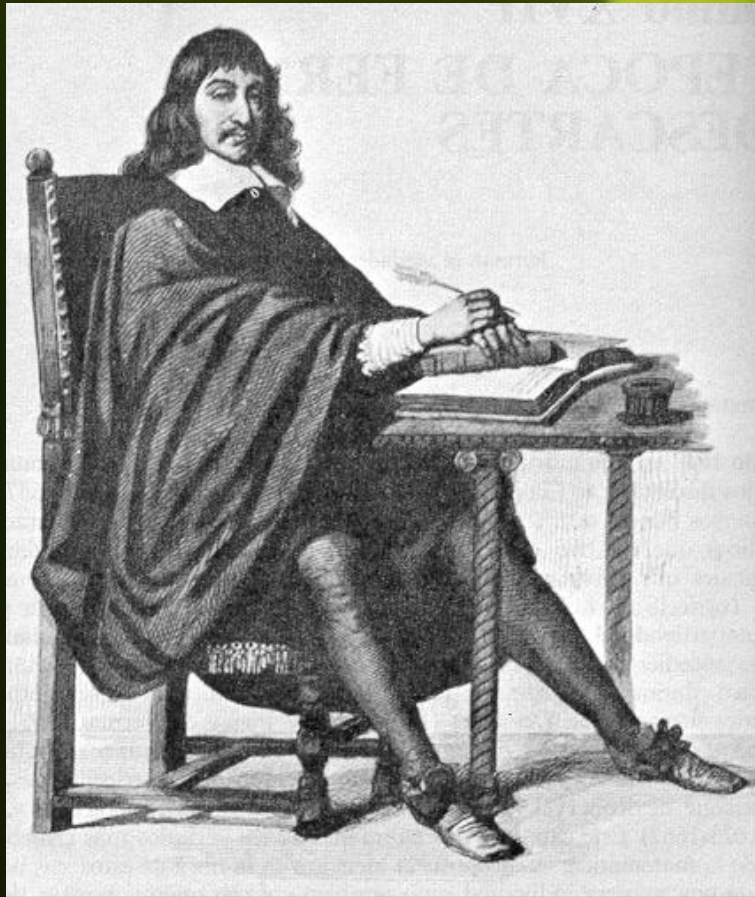


Pineal Gland

- ❑ Brain has a center
- ❑ Pineal gland
- ❑ Connection between mind and material world
- ❑ Incorrect



“Everything is self-evident.”



DISCOURS
DE LA METHODE

Pour bien conduire sa raison, & chercher
la verité dans les sciences.

PLUS

LA DIOPTRIQUE.

LES METEORES.

ET

LA GEOMETRIE.

Qui sont des essais de cete METHODE.



A LEYDE

De l'Imprimerie de IAN MAIRE.

CIO IO C XXXVII.

Avec Privilège.