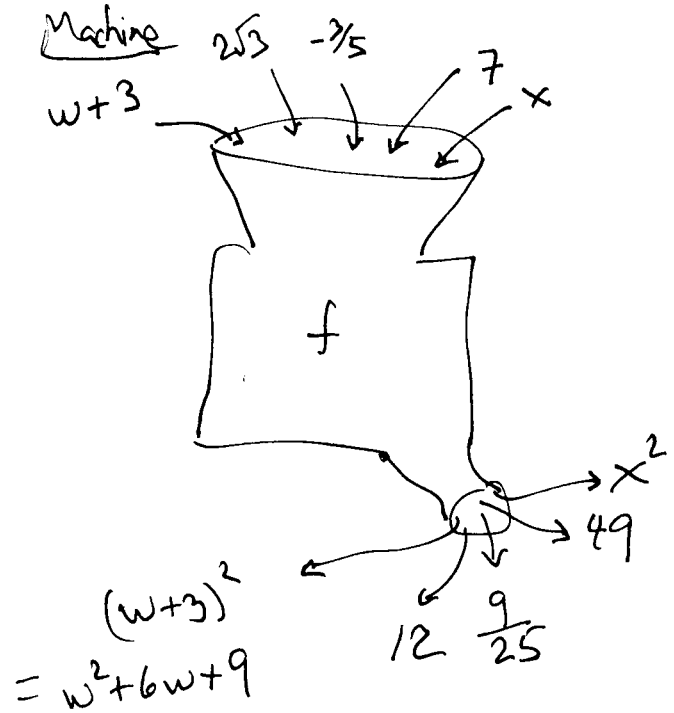
FIVE WAYS that anyone ever ~~looks~~ thinks about functions

1. Machine
2. Equation
3. Table
4. Graph
5. Mapping

Example: "Squaring function"

(1) Machine



NOTE: Input determines output.

(2) Equation

$f(7) = 49$

$f\left(\frac{-3}{5}\right) = \frac{9}{25}$

$f(x) = x^2$

$f(x+3) = (x+3)^2 = x^2+6x+9$

Alternatively,

$y = x^2$

NOTE: This is an equation in two variables, x and y, solved for y.

x = "independent variable"

y = "dependent variable"

(3) Table of ordered pairs

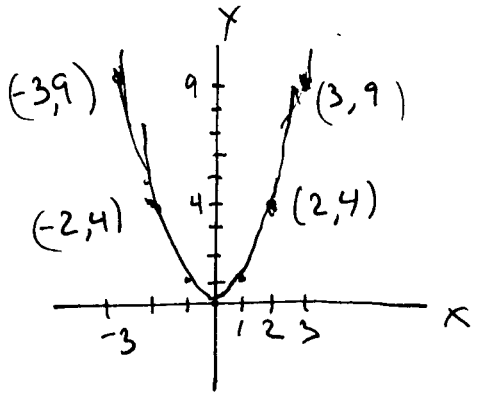
x	y
-3	9
-2	4
-1	1
0	0
$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$
2	4
3	9

Domain = set of number in the 1st column $= (-\infty, \infty)$

Range of f = set of number which (could) appear in 2nd column $= [0, \infty)$

NOTE: No number is repeated in the first column.

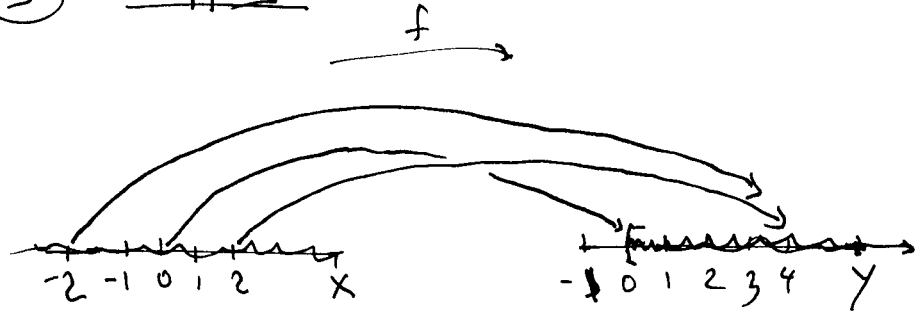
(4) Graph on the Cartesian Plane



algebra	⟷	geometry
ordered pair		point
equation		graph (curve)

NOTE: The graph passes the "~~horizontal~~ vertical line test."

(5) Mapping



NOTE: No arrows fork.