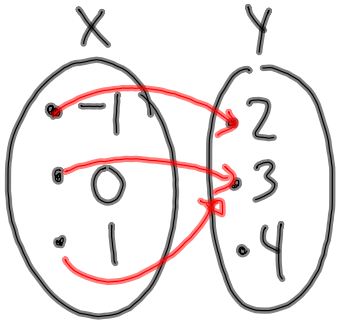
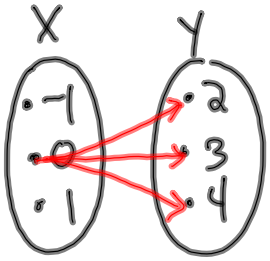
PROPERTIES OF Functions

WHAT EXACTLY IS A FUNCTION?

A RELATIONSHIP BETWEEN "X"s AND "Y"s WHERE EACH "X" GIVES YOU ONLY 1 "Y" VALUE.



FUNCTION ✓

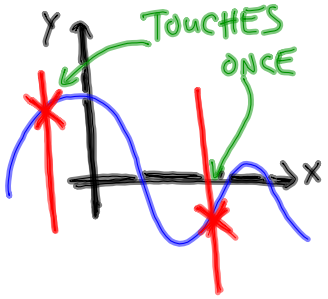


NOT A FUNCTION.

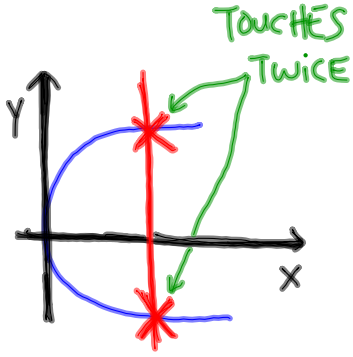
VLT (VERTICAL LINE TEST)

THE GRAPH IS A FUNCTION ONLY IF

A VERTICAL LINE THROUGH THE GRAPH ONLY EVER TOUCHES 1 POINT AT A TIME.



FUNCTION ✓



NOT A FUNCTION ✗

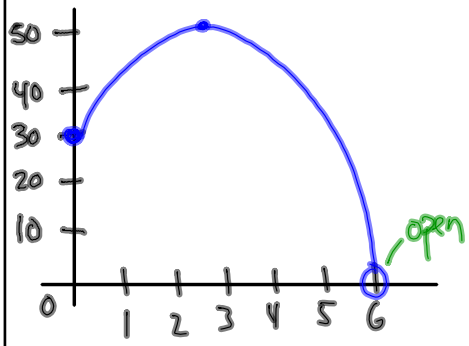
DOMAIN & RANGE

DOMAIN: ALL "x" VALUES.

(dom f =)

RANGE: ALL "y" VALUES.

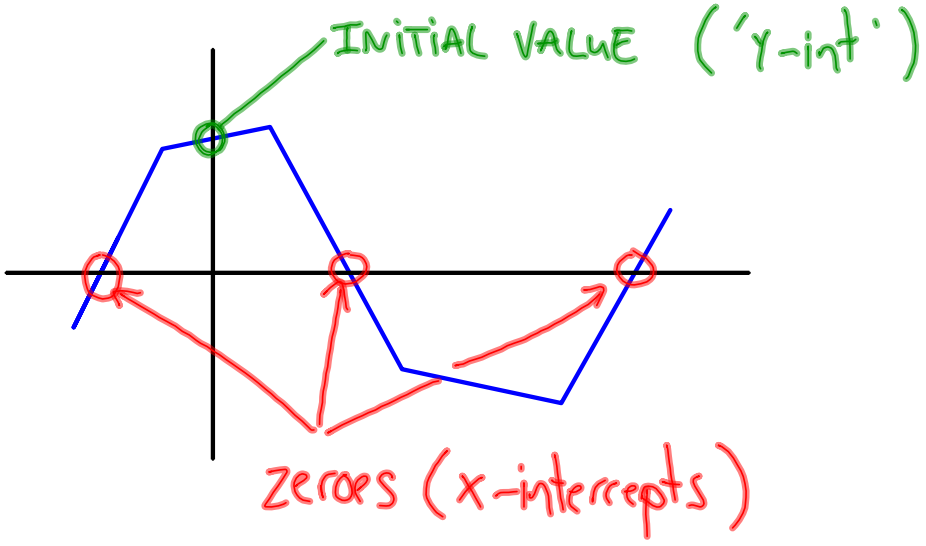
(ran f =)



dom f = [0, 6[

ran f =]0, 50]

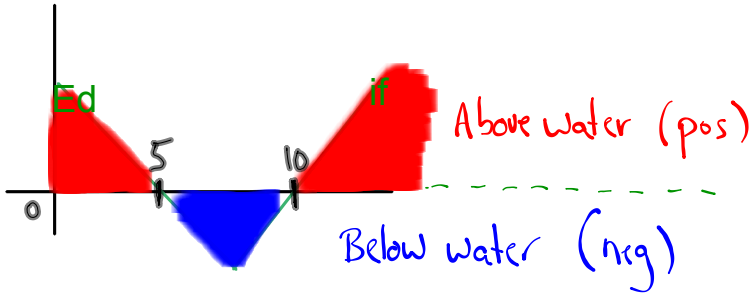
Initial Values and Zeroes



Signs of a Function

$f(x) > 0$ above water (positive)

$f(x) < 0$ below water (negative)



$f(x) > 0$, $[0,5[\cup]10,+\infty$

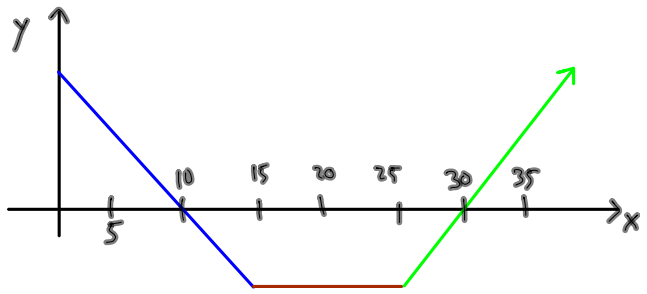
$f(x) < 0$, $]5,10[$

VARIATION OF A FUNCTION

$f(x) \nearrow$ (POSITIVE SLOPE) INCREASING.

$f(x) \searrow$ (NEGATIVE SLOPE) DECREASING.

$f(x)$ CONSTANT (SLOPE = 0) NO CHANGE.



$f(x) \searrow$, $[0, 15]$

$f(x)$ CONSTANT $[15, 25]$

$f(x) \nearrow$ $[25, +\infty[$

MAXIMUMS AND MINIMUMS

- MAXIMUM → HIGHEST "Y" VALUE.
  Relative MAX → HIGHEST between 2 points.
- MINIMUM → LOWEST "Y" VALUE.
  Rel. MIN → LOWEST between 2 points.