

TO BE OR NOT TO BE...A FUNCTION

Definition of a Function: for a set of given ordered pairs, for every y-value there is a distinct x-value (the x-values don't repeat and/or must pass the vertical line test on a graph)

Examples of Functions:

- 1) $g(x) = \{(9,3), (2,4)\}$ and $f(x) = \{(5,6), (3,6)\}$ are functions
- 2) any linear equation (except vertical lines)
For example, $2x + 5y = -8$
- 3) any polynomial equation (where y is degree one)
For example, $y = 3x^2 - 10x - 4$ or $y = x^3$
- 4) any absolute value equation (where y is degree one)
For example, $y = |x + 2|$

Examples of NON-function equations:

- 1) $h(x) = \{(3,4), (3,9), (1,5)\}$ is NOT a function since the x-value 3 is repeated
- 2) when the y variable is raised to an even exponent, the x-values repeat
 $x = y^2 + 3$

x	y
12	3
12	-3

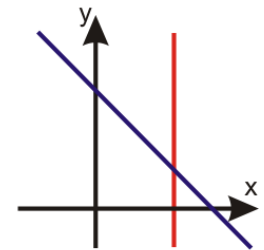
- 3) when the y variable is within absolute value bars, the x-values repeat
 $x = |y = 3|$

x	y
11	8
11	-14

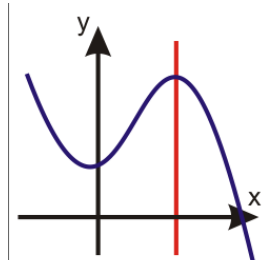
- 4) when there are inequalities involved, the x-values repeat
 $x < y$

x	y
3	5
3	4

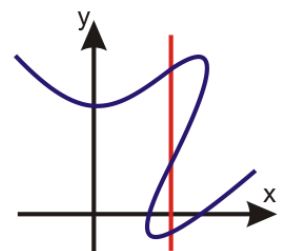
Vertical Line Test:



This is a function



This is a function



This is NOT a function