LEC1 - Review of Functions

1. $f(x) = x^2 + 1$

$\{x\}$, $\{y \mid y \geq 1\}$

2. $g(3) = 4$, $g(-3) = 4$

Yes, this is acceptable because this still show 1 y-value per x-value

3. $h(3) = 4$, $h(3) = 5$

No, this is not acceptable because $x = 3$ has 2 y-values

BONUS: Can we tell what is "acceptable" or not just by looking at the graph?

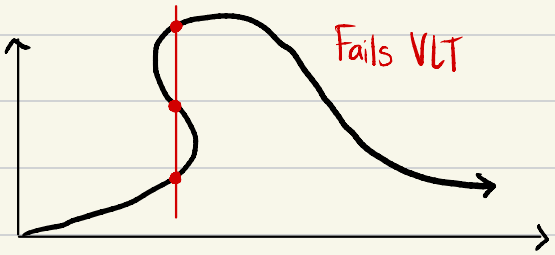
Yes, by using the vertical-line-test

Function

A function is a set of inputs (Domain), a set of outputs (Range), and a rule for assigning each input to exactly one output

Vertical line test

If any vertical line intersects a set of points (eg. a curve) on the xy plane more than once, then that set of points is not on the graph of a function (of x)



Example: Find the domain of the function defined by

$f(x) = \sqrt{x-5}$

Square root can't be negative

↳ $x - 5 \geq 0$

↳ $x \geq 5$

↳ $\{x \mid x \geq 5\}$

This is the domain

When thinking about domains

- Division by 0
- Negative square roots
- Logarithms