



The Vertical Line Test

Video Notes

[Video Link](#)

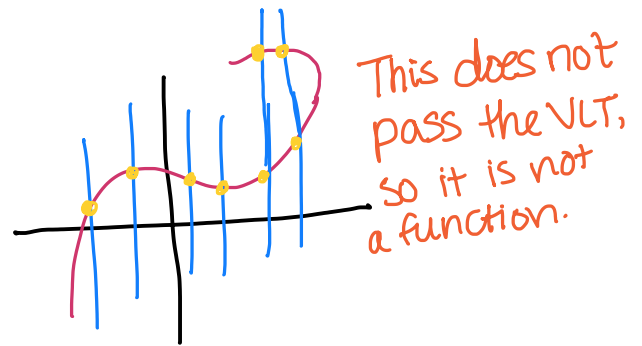
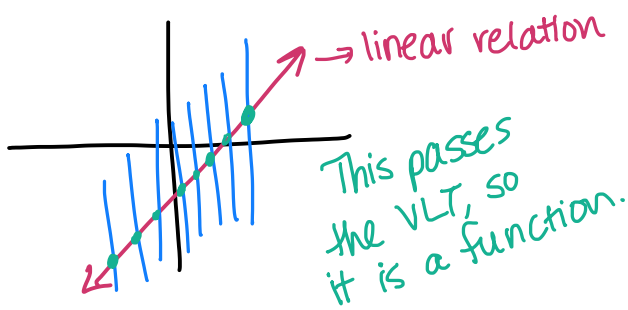
The Vertical Line Test

Background Knowledge:

- What is a function?
- Examples and Nonexamples of Functions

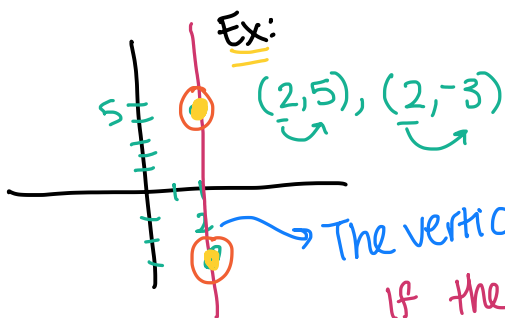
What is the vertical line test?

If any vertical line intersects a relation only once, then that relation is a function.



Why does the vertical line test work?

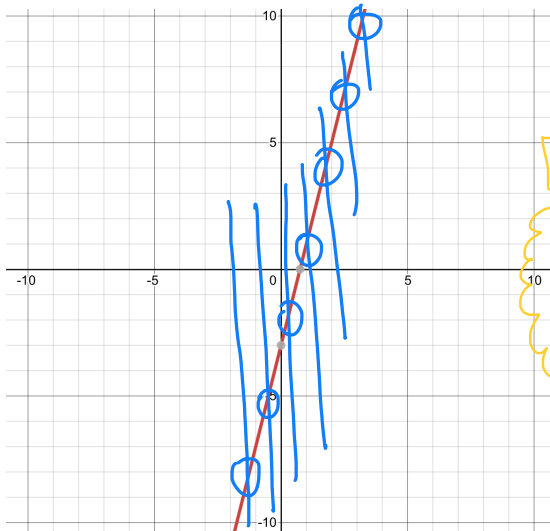
Reminder: A function is a relation in which each input only has one output.



If the line intersects a relation more than once, we are showing that the input represented by the line has more than one output.

Do these relations pass the vertical line test?

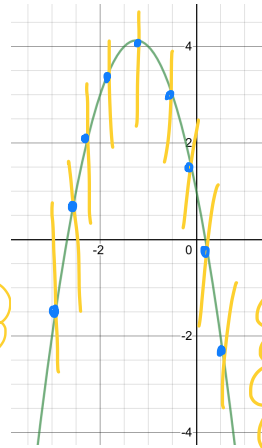
$y = 4x - 3$ Linear relation.



This passes the VLT, \therefore it is a function.

Important Note:
ALL linear relations (except vertical lines) are functions.

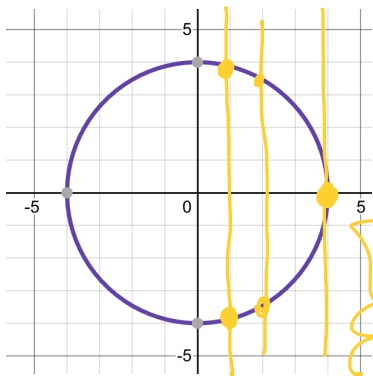
$y = -2x^2 - 5x + 1$ Quadratic Relation



This passes the VLT, \therefore it is a function.

Important Note:
ALL quadratic relations are functions.

$x^2 + y^2 = 16$ - circle



This fails the VLT, \therefore it is not a function.

Important Note:
No circles are functions.

$y = 3^x$ - Exponential Relation



This passes the VLT, \therefore it is a function.

Important Note:
ALL exponential relations are functions.

