9.1 Part 1 Functions

A <u>function</u> is a relation in which each
element of the domain is paired with
exactly one element of the range.

x's

y's

✳ x's cannot repeat ✳

Example 1

Is {(5,-2), (3,2), (4,-1), (-2,2)} a function?
Why or why not?

*yes, it is a function
because the x's don't
repeat.*

Example 2

Is {(-1,5), (-9,4), (-1,-4), (3,0)} a function?
Why or why not?

*No, it is not a function because
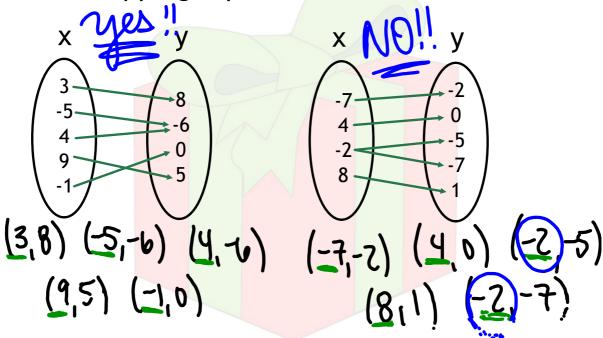the -1 repeats.*

Example 3

Is {(3,2), (8,-6), (-6,2), (7,4)} a function?
Why or why not?

*Yes, it is a function because the
x's don't repeat.*

Example 4

Which mapping represents a function?

x **yes!!** y x **NO!!** y

3 → 8   -7 → -2
-5 → -6   4 → 0
4 → 0   -2 → -5
9 → 5   8 → -7
-1   1

$(3,8)$ $(-5,-6)$ $(4,-6)$ $(-7,-2)$ $(4,0)$ $(-2,-5)$

$(9,5)$ $(-1,0)$ $(8,1)$ $(-2,-7)$

Vertical Line Test

If any vertical line passes through no more than one point of the graph of a relation, then the relation is a function.

Example 5

Use the vertical line test to determine if each relation is a function.

NO   YES   NO   YES