# Introduction to Functions and Relations

## *Overview of problems*

*Example Set: A*

*Determine if the relation is a function*

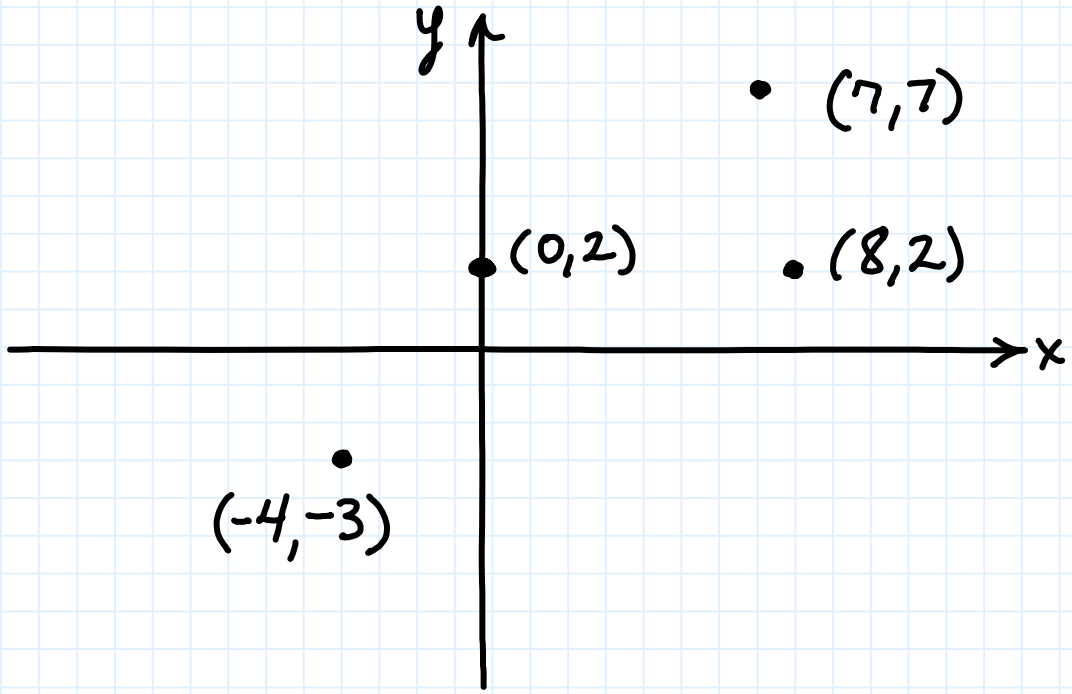
$\{(0,6), (1,-3), (4,9), (-5,-12)\}$

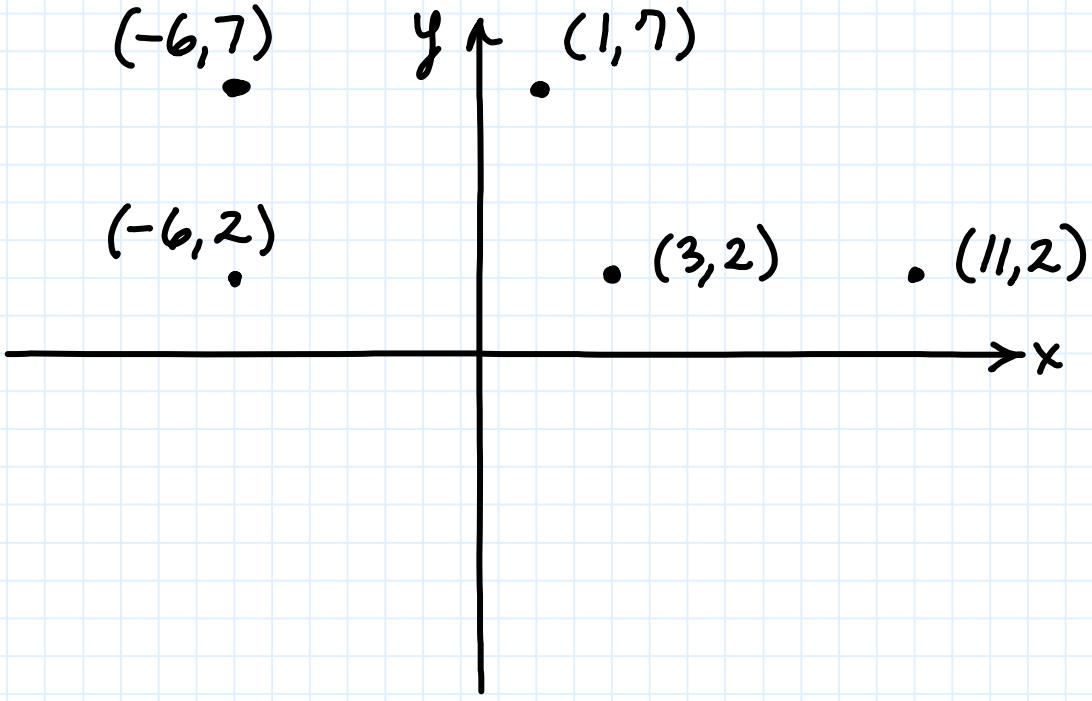
$\{(2,4), (-2,4), (3,9), (-3,9)\}$

$\{(5,7), (0,-6), (-2,8), (5,-3)\}$

## Example Set: B

*Use a mapping diagram to describe the relation, then decide if the relation is a function*



## Example Set: C

*Find the domain and range of the function*

$$\{(3,9), (0,-5), (2,13), (4,6)\}$$

$$f(x) = 3x^2 - 2$$

*Find the **Real Number** domain of the function*

$$g(x) = \frac{x+1}{x}$$

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

$$f(x) = \frac{\sqrt{x+1}}{x-2}$$

## Example Set: D

*Evaluate the function for the indicated value*

$$f(x) = 2x - 10, \quad f(-5)$$

$$g(x) = -4x^2 + x + 6, \quad g(-1)$$

$$h(x) = \frac{6x^3 - 2x}{x}, \quad h(2)$$

# Introduction to Functions and Relations

## *Overview of problems- KEY*

*Example Set: A*

*Determine if the relation is a function*

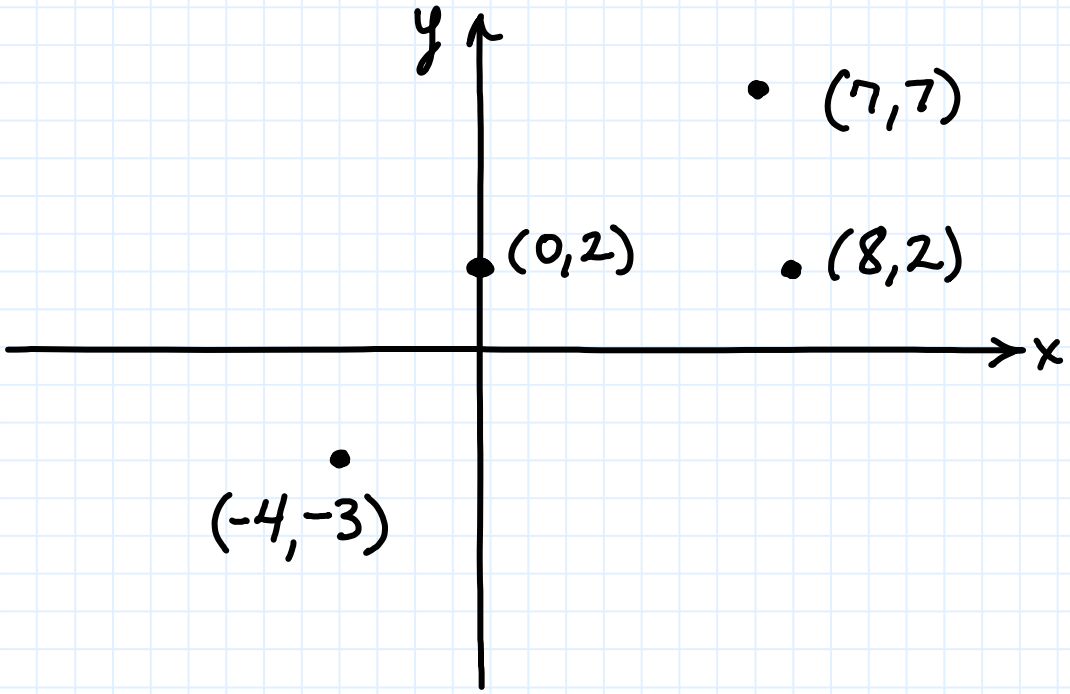
$\{(0,6), (1,-3), (4,9), (-5,-12)\}$ function

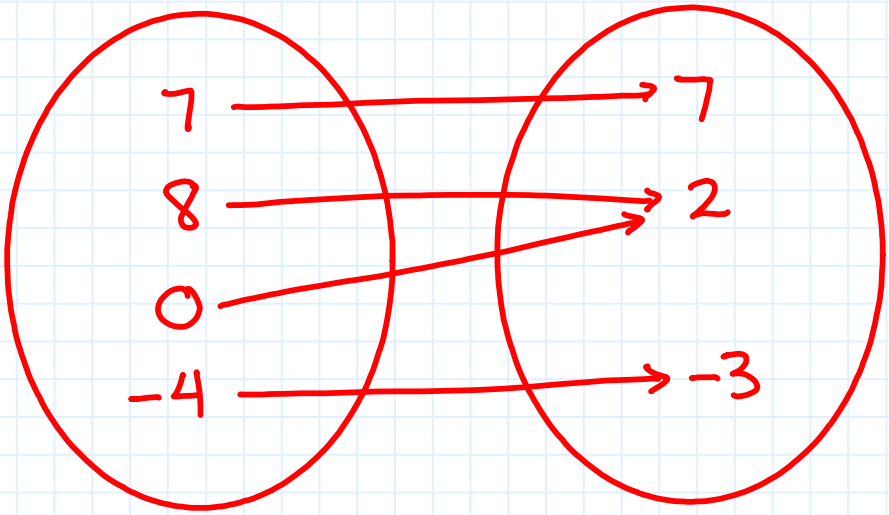
$\{(2,4), (-2,4), (3,9), (-3,9)\}$ function

$\{(5,7), (0,-6), (-2,8), (5,-3)\}$ not a function

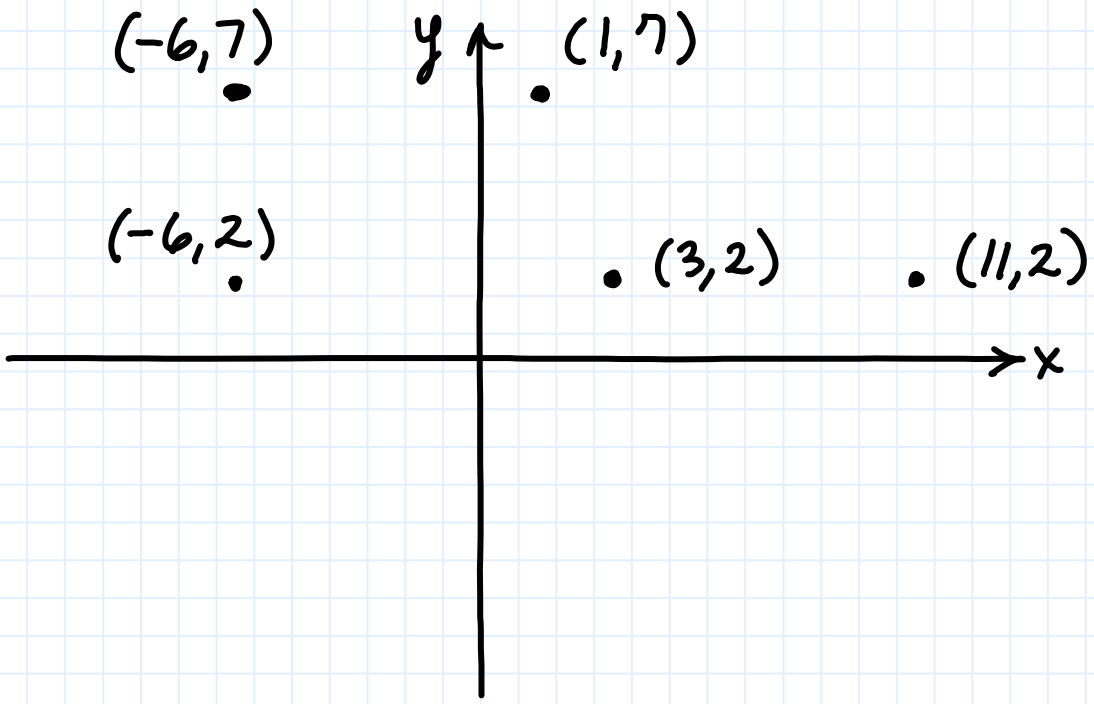
## Example Set: B

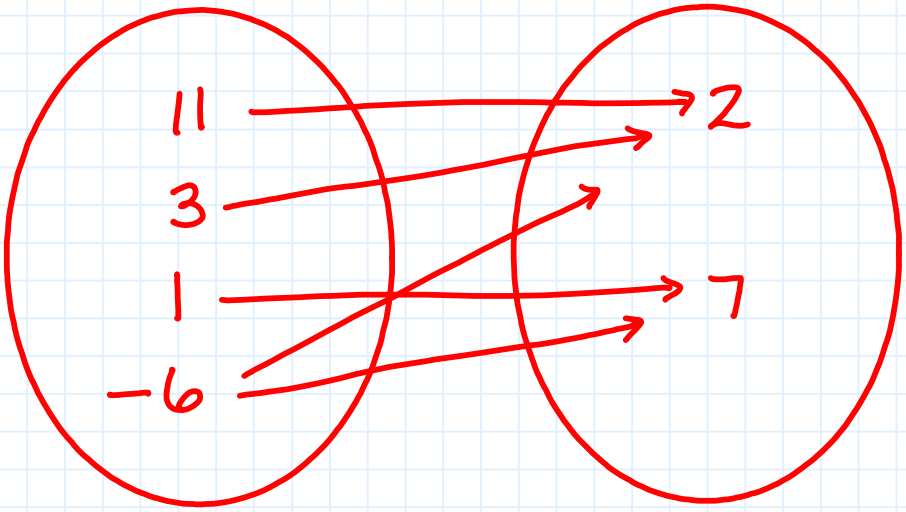
*Use a mapping diagram to describe the relation, then decide if the relation is a function*




function




not a function

## Example Set: C

*Find the domain and range of the function*

$\{(3,9), (0,-5), (2,13), (4,6)\}$

D: 3, 0, 2, 4 R: 9, -5, 13, 6

$f(x) = 3x^2 - 2$

D: All Real Numbers

R: Real Numbers $\geq -2$

*Find the **Real Number** domain of the function*

$g(x) = \frac{x+1}{x}$ all Real Numbers, $x \neq 0$

$h(x) = \sqrt{x-5}$ $x \geq 5$

$f(x) = \frac{\sqrt{x+1}}{x-2}$ all Real Numbers, $x \geq -1$, $x \neq 2$

## Example Set: D

*Evaluate the function for the indicated value*

$f(x) = 2x - 10$, $f(-5)$ $-20$

$g(x) = -4x^2 + x + 6$, $g(-1)$ $1$

$h(x) = \dfrac{6x^3 - 2x}{x}$, $h(2)$ $22$