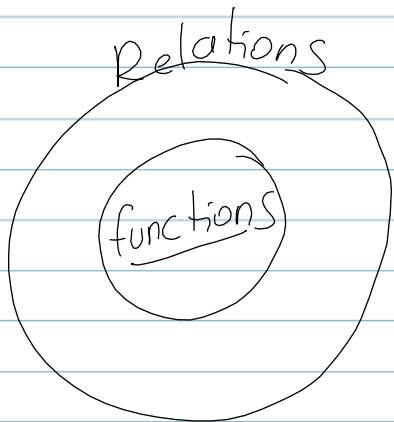


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3.2 Functions

Relation : any correspondence between a set of input values & output values.



Function : each input value (x) has only one output value (y) (no repeating x 's (input values))

$$A = \{ (1, 2), (3, 6), (5, 8) \}$$

function : yes or no x has to be different

domain : $D = \{ 1, 3, 5 \}$
Set of
input values (x)

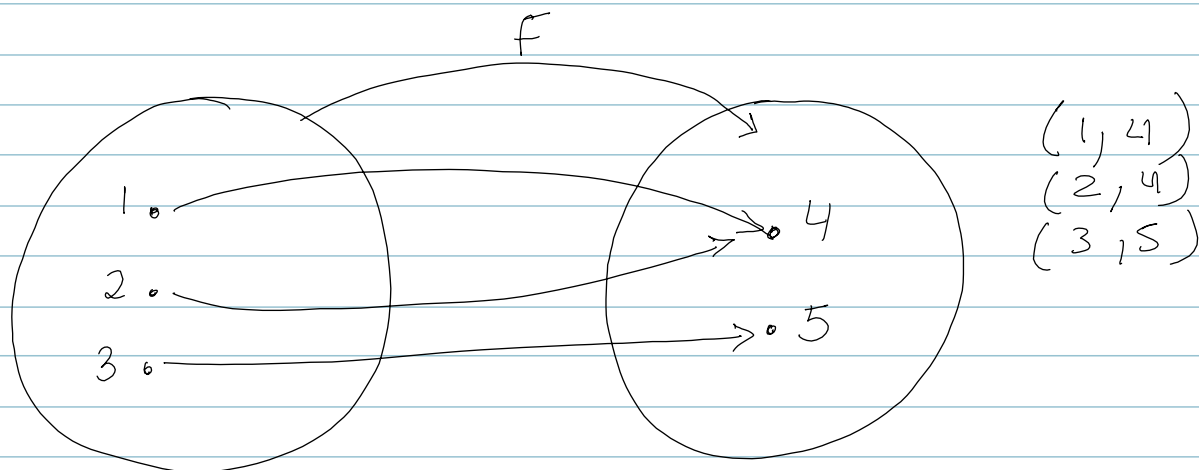
range : $R = \{ 2, 6, 8 \}$
Set of
output
values (y)

$$B = \{(1, 3), (2, 3), (3, 3)\}$$

function : yes or no

$$\text{Domain} : D = \{1, 2, 3\}$$

$$\text{Range} : R = \{3\}$$



function : Yes

$$D : \{1, 2, 3\}$$

$$R : \{4, 5\}$$

Year

of playoff
games won

1982 → 6

1992 → 12

1998 → 5

$(1982, 12)$

$(1992, 6)$

$(1998, 5)$

$(1998, 12)$

function : NO

$$D : \{1982, 1992, 1998\}$$

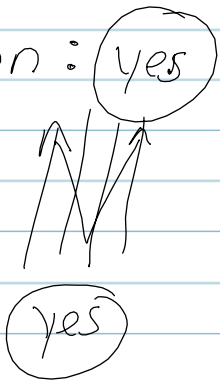
$$R : \{5, 6, 12\}$$

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$$y = |x - 2| x^3$$

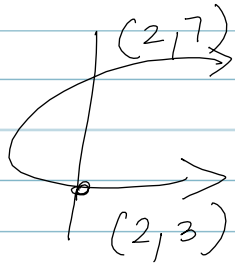
function: yes or no

1
x = 2



$$x = y^2$$

function: yes or no



function notation

$$f(x)$$

f of x

$$y = 2x - 4$$

find y when x = 5

$$y = 2(5) - 4 = 6$$

$$(5, 6)$$

$y = f(x)$

$$y = 2x - 4$$

$$f(x) = 2x - 4$$

$$f(5) = 2(5) - 4 = 6$$

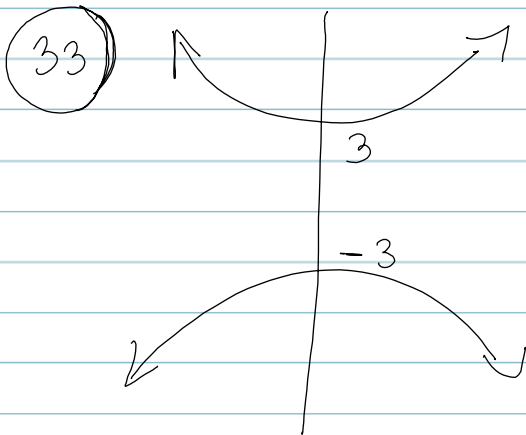
↓
replace x
with 5

$(5, 6)$

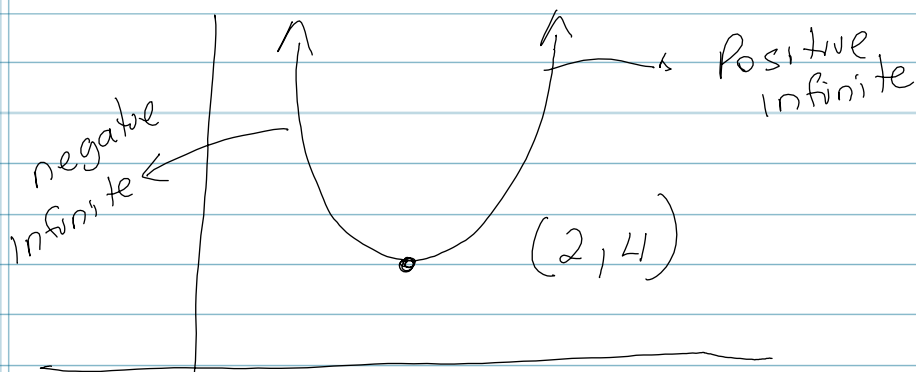
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Section 3.2

Domain / Range



$$D = \mathbb{R}$$
$$R = (-\infty, -3] \cup [3, \infty)$$



$$D: \mathbb{R}$$
$$R: y \geq 4$$
$$[4, \infty)$$

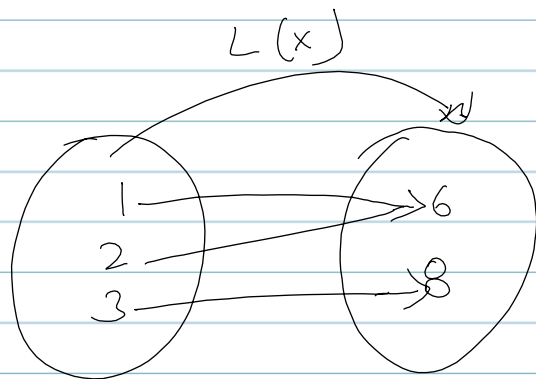
x	y
0	0
1	5
2	4
3	5
4	8

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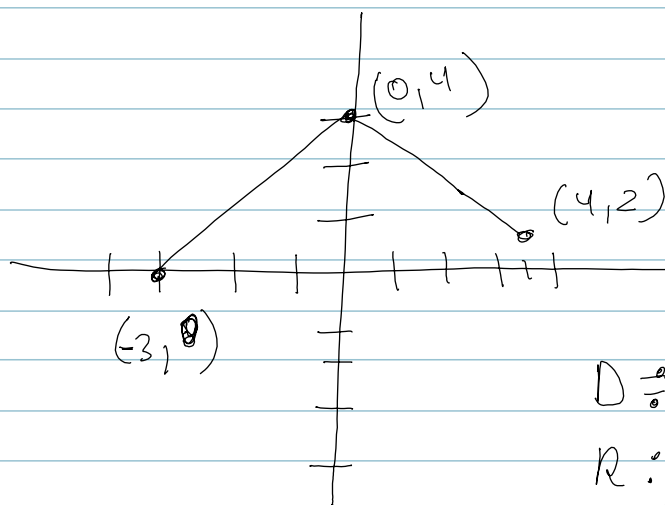
$$f(x) = x^2 - 3x + 2$$

$$g(x) = 4x + 1$$

$$h(x) = -2$$



k	$k(x)$
1	4
2	5
3	6



$$D := [-3, 4]$$

$$R := [-2, 4]$$

$$f(3) = (3)^2 - 3(3) + 5 = 2 \quad (3, 2)$$

$$g(-1) = 4(-1) + 1 = -3$$

$$h(5) = 5 - 2$$

$$h(8) = -2$$

$$h(\odot) = -2$$

$$f(z) = z^2 - 3z + 2$$

$$\begin{aligned} f(x-3) &= (x-3)^2 - 3(x-3) + 2 \\ &= x^2 - 6x + 9 - 3x + 9 + 2 \\ &= x^2 - 9x + 20 \end{aligned}$$

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$$K(1) = 4$$

$$K(2) = 5$$

$K(4) =$ Does not exist

$$L(2) = 6$$

$$L(8) = \text{DNE}$$

$$R(4) = 2$$

$$R(1) = 3$$

$$R(8) = \text{DNE}$$