

Sec 2.3

Function

$$f(\overset{\text{input}}{\downarrow}) = \text{output} \leftarrow \underline{\text{one output}}$$

Domain All (possible allowed) input

(Range) All outputs

x : input
 " y is a function

y : outputs
 of x "

$y = x^2$ or
 all real Domain

$$y^2 = x$$

range
 $x \geq 0$

x	y
0	0
1	1
2	4
4	16
-1	1

← range

Domain →

Domain: 0, 1, 2, 4, -1

$\{(0,0), (1,1), (2,4), (4,16), (-1,1)\}$

y used twice
 is OK

x	y
0	0
1	1
1	-1

$$1^2 = 1$$

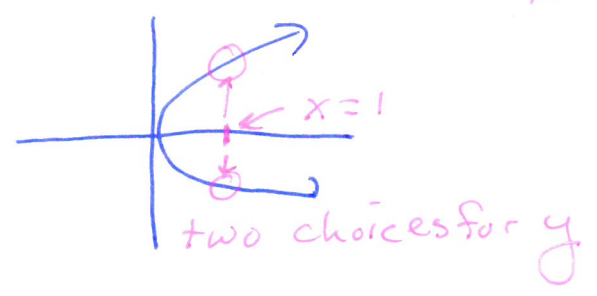
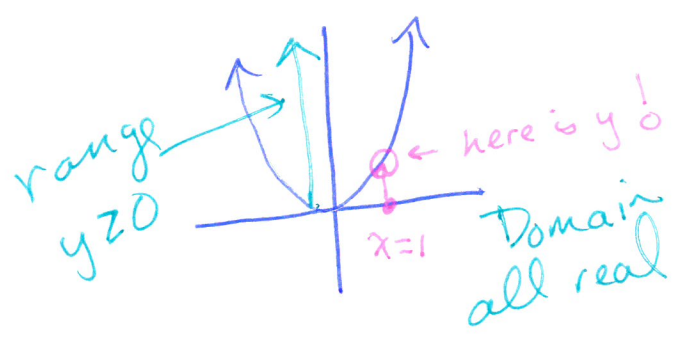
$$(-1)^2 = 1$$

two y 's
 output
 for 1 x

Not a function

$\{(0,0), (1,1), (1,-1)\}$

x used twice
 is not OK



Compose 2 functions

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

$$g(x) = \sqrt{x}$$

$$f \circ g(x)$$

"f of g of x"

$$f(g(x)) = (\sqrt{x})^2 + 3(\sqrt{x})$$

$$g \circ f(x) = g(\underbrace{f(x)}) = \sqrt{x^2 + 3x}$$

2.3.# 9 - 15, 17, 19, 20, 22, 25, 31
all

2.5# 65, 67, ~~69~~, 71