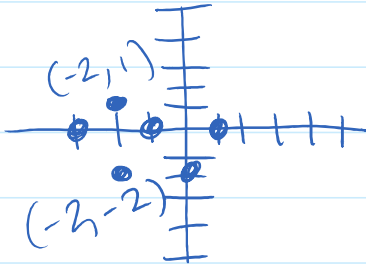


# A.1 Review of Functions

Function: from set A to set B, such that each element (x) in set A is assigned to one element (y) in set B.

\*passes vertical line test



Domain: set of all x values possible

Range: set of all y values possible

Problem #1: Determine whether the equation is a function y of x.

a)  $x^2 + y = 1$   
 ~~$x^2$~~        ~~$y$~~        $-x^2$

$$y = -x^2 + 1$$

$$0$$

$$-0^2 + 1 = 1$$

yes

b)  $-x + y^2 = 1$   
 ~~$x$~~        $+y^2$        $+x$

$$\sqrt{y^2} = \sqrt{x+1}$$

$$y = \pm \sqrt{x+1}$$

$$\pm \sqrt{0+1} \quad (0, 1) \quad (0, -1)$$

$$\pm \sqrt{1}$$

NO

± 1

Composition: the action of plugging a function  $g \circ f(x)$  into another function.

Difference of Quotient:  $\frac{f(x+h) - f(x)}{h}$ ,  $h \neq 0$

Problem #2: find the difference quotient

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

$$3(x+h) + 2 - (3x + 2)$$

$$\cancel{3x} + 3h + \cancel{2} - \cancel{3x} - \cancel{2}$$

$$\frac{3h}{h} = 3$$

b)  $f(x) = x^2 - 4x + 7$

$$(x+h)^2 - 4(x+h) + 7 - (x^2 - 4x + 7)$$

$$(x+h)(x+h)$$

$$\cancel{x^2} + 2xh + h^2 - \cancel{4x} - 4h + \cancel{7} - \cancel{x^2} + \cancel{4x} - \cancel{7}$$

$$\frac{2xh + h^2 - 4h}{h}$$

$$2x + h - 4$$

$$2x - 4 + h$$

	x	h
x	$x^2$	$xh$
h	$xh$	$h^2$