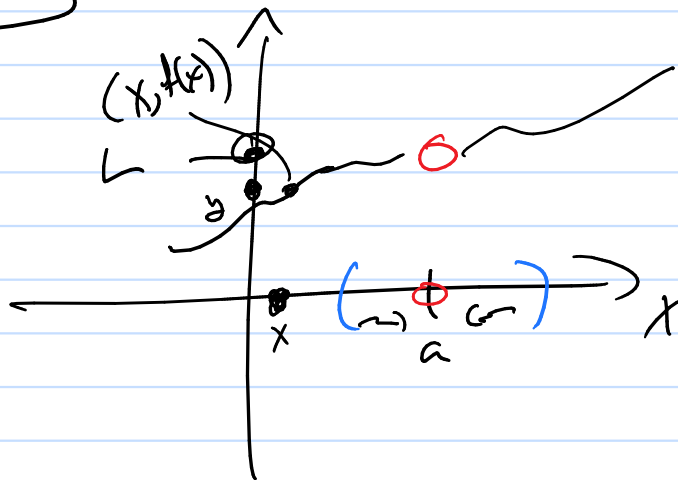
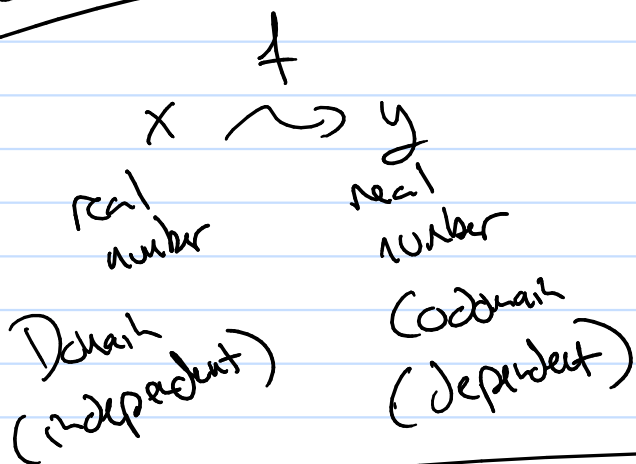


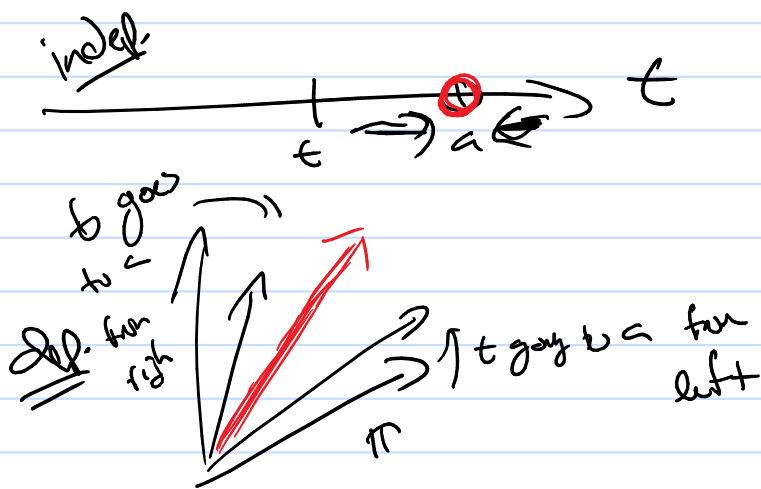
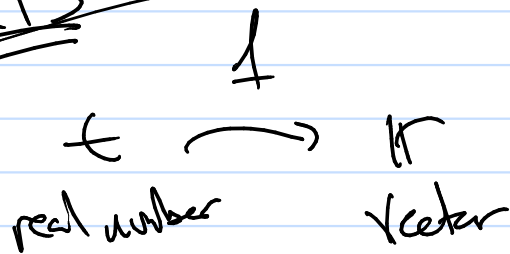
Math 344

Functions

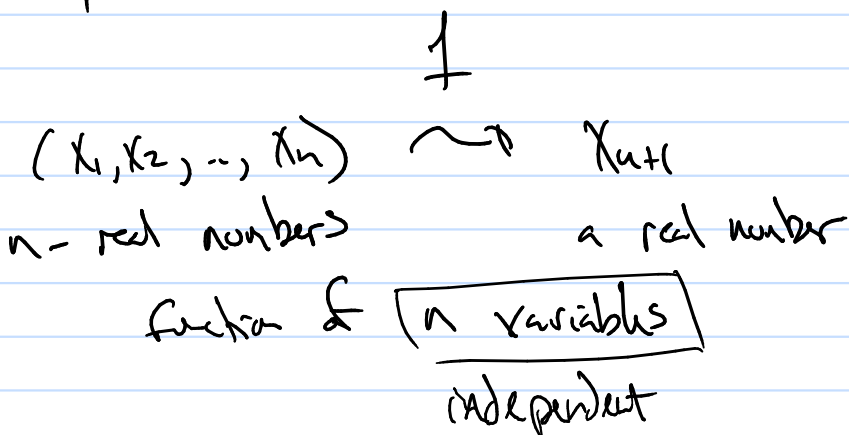
Calc 1-2



ch 13



ch 14 / ch 15



(ex)
 function of 2 variables
 $(x, y) \xrightarrow{f} z$

(ex)
 $z = x^2 + y^2 - xy$
 $f(x, y) = x^2 + y^2 - xy$

$$z = f(x, y)$$

3D ← geogebra

vs $w = f(x, y, z) \rightsquigarrow \text{pt } (x, y, z, w)$

4D ←



level curves

$$z = f(x, y)$$

3D

↳ "plot" 3D or 2D

level surfaces

$$w = f(x, y, z)$$

4D

↳ "plot" 4D or 3D

(ex)

$$z = x^2 + y^2$$

take slices of 3D object

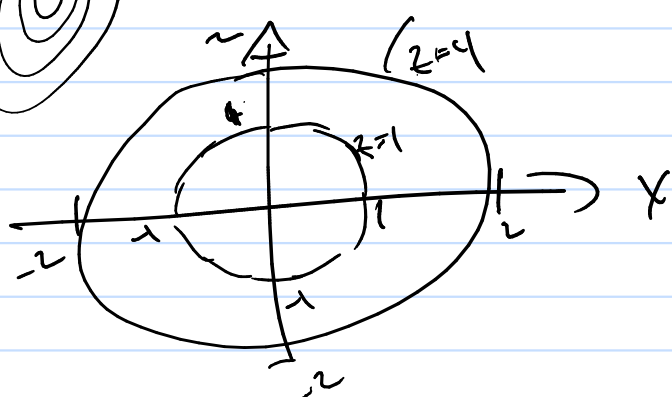


z

level curve

by taking $z = \text{const.}$

(independent plane xy)



$$\text{at } z = 4, \quad 4 = x^2 + y^2$$

$$z = 1, \quad 1 = x^2 + y^2$$

$$w = f(x, y, z) \quad \boxed{4D}$$

level surfaces

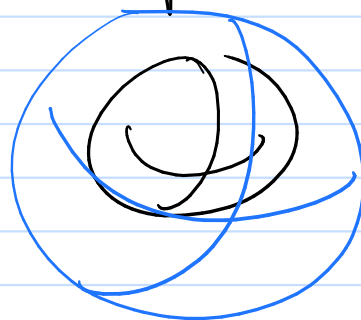
let $w = \text{seq of constants}$

$$w = x^2 + y^2 + z^2 \quad \text{let } w = 4, \quad 4 = x^2 + y^2 + z^2$$

sphere of radius 2

$$\text{let } w = 9, \quad 9 = x^2 + y^2 + z^2$$

sphere of radius 3



$$x_{n+1} = f(x_1, x_2, \dots, x_n)$$

tools?
