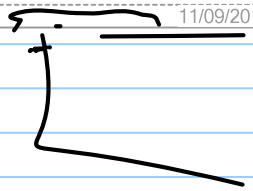
Note Title 11/09/2018

poincare.nuigalway.ie/teaching/MA133



Functions

What is a function?

- A function describes a quantitative relationship.
  - e.g position vs. time
    - speed vs. time
    - stock prices vs. time
- a function takes in a number

and returns a number.

A function can be described in various ways

- verbal description
  e.g the height of an object at time t

- algebraic description:

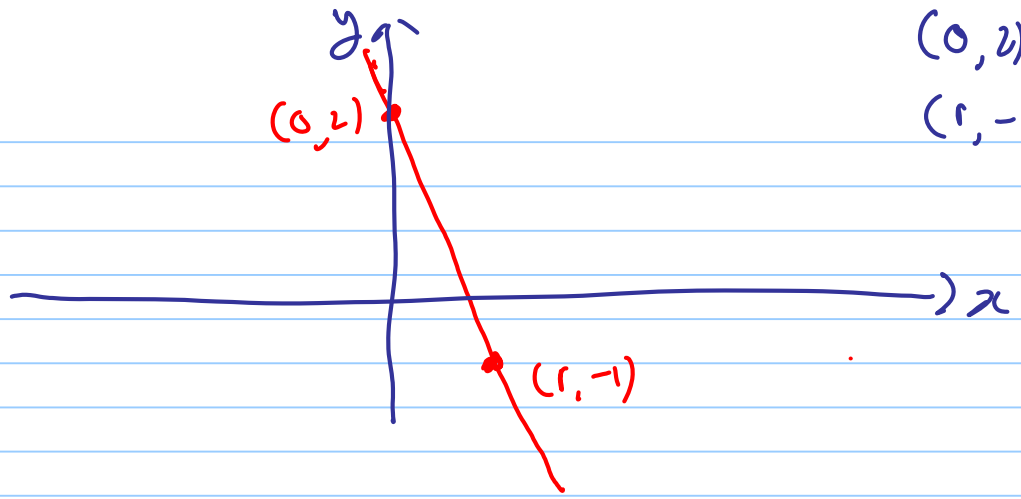
$$h(t) = 10 - 5t^2$$

- graphically :

- numerical :

$$h(0) = 10 \qquad h(1) = 5 \qquad h(2) = -10$$

Exercise 2.1.1. graph of $f(x) = 2 - 3x$



$(0,2) \leftarrow f(0) = 2 - 3(0) = 2$

$(1,-1) \leftarrow f(1) = 2 - 3(1) = 2 - 1$

2.1.3

$P(t)$ = price at time t

t = number of days since Jan. 1

$P(0) = 150000$

$P(84) = 156000$ (Mar 25 $\hookrightarrow$ $t = 84$)

$P(180) = ??$ (June 30 $\hookrightarrow t = 180$)

$P(t) = at + b$ since P is linear.

$P(0) = b$ so $b = 150000$

$P(84) = a(84) + 150000 = 156000$

So $84a = 6000$

$a = \frac{6000}{84}$

so $P(t) = \frac{6000}{84}(t) + 150000$

$\therefore$ Price on Jun 30

$\omega \quad P(180) = \frac{6000}{84}(180) + 150000$

$= 163,000$ (3 significant places)