# From Tuesday

# Exercise 3

disp("exercise 3")

[2 3 4]<=[3 3 5]

5>3\*2

5\*3>2

6+3 ~= 3^2

disp("---row 28 ---")

2+5>4:7

5<3<1

[2 3 4]>=[3;3;4;5]

3^4>1

pi>3.4159

# Exercise 4

(note that | and || are subtly different, as are & and &&)

disp("exercise 4")

lat=5:-1:1; z=[2.1 2.2 2.3 NaN 2.5];

lat>2.5 & lat<3.2

lat<2.5 & lat>4.2

lat<1.5 | lat>4.2

z(round(lat)==3)

disp("---row 37 ---")

find(lat<2)

~isfinite(z)

z(isfinite(z))

ii = lat<=4 & lat>=2; z(~ii)

z(1)\*3-6.3

# New for Thursday

# Exercise 5

Download the salt.txt file from lab 3 from the google drive folder: <https://drive.google.com/drive/folders/1rWygAA7RW2dIcjfqFg36qY27OTDNZFqp?usp=sharing>

Read in sal.salinity as you did in lab3.m and histogram it.

There are nan values in the data – to get rid of them, I did the following:  
  
salin\_flat = sal.salinity(:);

salin\_flat(~isnan(salin\_flat));

Answer the following questions using matlab:

1) Find mode of the salinity according to matlab?

2) Find the mean value of the salinity according to matlab?

3) The salinity histogram is bimodal: write matlab code below that calculates the value of the low salinity and high salinity modes. That is: how do you separate the salinitys using a logical index into high and low salinities, and find the mode of the two sub-populations?

4) Where (at what depth) in the ocean are the low salinity and high salinity values coming from?

5) Why do you think the ocean is able to keep the two salinity populations separate? Why doesn't the salinity mix until it's the same, like cream in coffee?

Some mode/mean humor [Stats twitter](https://twitter.com/moebio/status/1299746902871666688)