Python Lab – NumPy

- Write a function that takes as input a 2-D ndarray and scales the last row and column by 2
- Create a numpy array with 100 numbers from 1 to 20. You are not allowed to use any loop.
- Create a numpy array containing the sine of the numbers from the above array. You are not allowed to use any loop
- Create a graph with the last 2 arrays
- Compute the dot product of arrays [1,2,3,4] and [cos(1),cos(2), cos(3)], but first you have to reshape them into 2-dimensional arrays
- Create two numpy arrays (3,3) - **A, B**
- Compute **A + B**
- Compute **3A + B**
- Find the maximum and the minimum of **B**.
- Normalize the matrix **B** by adding a constant c that makes its minimum be equal to 0. How will you do it for any matrix?
- Compute the sum of the elements in A. You are not allowed to use any loop.
- Compute the transpose of **A**
- Compute the inverse of **A**. Remember there is a module called numpy.linalg.
- Compute the determinant of **A**
- Solve the following equations:
  - X+2Y=3
  - 3X+4Y = 0
- Create a function

  ```
  def plot(fn,a,b,num_points)
  ```

  Shows the plot of function fn between a and b using num_points
- Use it for the function f (x) = x ∗ cos(1/x) in the range:
  - [0 ,pi/4]
  - [-10,10]
  - [0,2]