In[33]:

In[23]:

In[25]:

both if you have a function in analytic form, the best method to use converge, or it crashed your computer, or there's a weird error that's not real, or etc etc. it's an art, not a science, so click through the actual often 4-5 orders of magnitude slower in native python, since all of the built-in methods are written in C (a compiled language) and

(ii) indexing + slicing.

however! you must be careful with this, to make sure you don't overfill the memory allocations!!

Part 1: numpy

[3.]

[ 8 10 12]

[ [ 2 4 6

[ +

[10 11 12]

[ 4 5 6

[ [ 6 2 3

[ [ 6

[ ]

[ 0. 0. -3. 0.]

0, the array at index 0 has size 2 and the array at index 1 has size 3 ----> 1

0.98 0.99 1.  

0.84 0.85 0.86 0.87 0.88 0.89 0.9  0.91 0.92 0.93 0.94 0.95 0.96 0.97

[2 3 4 5 6]

[0 2 0 0]

[ [1 0 0 0]

[0. 0. 0. 0. 1.]

[0. 0. 0. 1. 0.]

[ [1. 0. 0. 0. 0.]

0.72730125 0.46470005 0.87362189 0.84984118

[0. 0.]

(3, 2)

5

5

def root2

root

print

# element from the source array:

print a

# let's get the first column and keep the shape

print

print

print

print

# standard python version

#below we're going to take a look at the differences between how you can index and splice the two types of arra

a

b

# we also have np.block, to make larger arrays

import scipy.optimize

scipy.optimize.minimize

3

as

np

cos

-=

return

y

f

x

−

2

1

np

arange

eye

append

hstack

vstack

aa

a

aa

array

time

hstack

vstack

sum()

plt

ValueError

file, which makes reading it in at a later date dramatically faster than saving everything as
The rule of thumb is to use cubic polynomial splines to perform interpolation. This curve that approximates the original data. Naturally, the higher order the polynomial, the better the fit to the data, but having too high an order can lead to overfitting. This method is called 'splining'. It fits polynomials to subsets of the data, then joins them where they overlap, to form a smooth, continuous, differentiable curve.

Interpolation is a method of smoothing raw data. There are many, many, methods, but the most common is polynomial interpolation, also known as spline interpolation. Below, the examples are:

- (i) Simple interpolation and smoothing.
- (ii) Curve fitting.
- (iii) Simple integration and differentiation.