PROBLEM 5::

CHOOSING CRITERIA OF GOOD LIBRARIES:

1. User friendliness:

The library function must be user friendly. If it has a large number of inputs and the are in random way, the user will not properly understand where he/she has to give which input and according to which sequence.

This type of problem was there in old libraries (like GSL). To use FFTW, there are more than 50 functions with different data types and usability (e.g real to real, real to complex, complex to complex.... etc). The forms of the functions are also tough and one need a previous knowledge to use them.Whereas in numpy the numpy.fft module does the same job without ambiguity. One with very little previous knowledhe can use that one.

2. Order of complixity and time taken:

The library function must use the least complex algorithm to solve the similar problem. For example if a library uses FFT algorithm (complixity(n*ln(n))) vs another one uses normal DFT algothm (complixity(n^2)) then the 2^{nd} one will need ~10^9 times than the previous one for 10^{10} data points. So if the 1^{st} one needs 1s then the 2^{nd} one will need ~100 years.

In that case there is no logic to use that type of library and it will be thrown away.

3. Accuracy and cost:

Accuracy (according to the physical appereance and application of the given problem) is one of the main goal and motivation to choose proper library function.

Some library are too costly. It's another criteria to choose library according to the cost permitted.