

**Question - 1**
Performance

SCORE: 5 points

You have a problem whose execution time is a polynomial function of N , the number of elements in the problem.

That's to say: $t = cN^k$

Which of the following techniques might you consider to reduce the execution time (check all that apply)?



lessen the coefficient c (e.g. by running on a faster computer);



Effectively reduce the size of N by dividing the problem into smaller, independent sub-problems (provided that the cost of recombining the solutions doesn't outweigh the benefit).



Specifying a different value of the exponent k .

Question - 2
3 sum problem

SCORE: 20 points

Given an array of n integers, are there elements a , b , c in the array such that $a + b + c = 0$? Find the number of unique triplets in the array which gives the sum of zero.

Hint: be careful not to count duplicates.