A Simple Exponential Problem

Preprint · July 2020

DOI: 10.13140/RG.2.2.35010.61127

Jamell Ivan Samuels
N/A

A SIMPLE EXPONENTIAL PROBLEM*

JAMELL IVAN SAMUELS (JAMELLSAMULES@GOOGLEMAIL.COM.

Key words. NP, P, Exponential, Computational Complexity

AMS subject classifications. 0A99

Abstract. Following on from a recent paper 'Proof that P≠ NP', I propose a unique problem based around a similar framework. From this problem we can carefully deduce if it is possible at all for NP to equal P.

1. Problem Statement.

Referencing the previously given definition of counting [2].

Definition 1.1.
Counting is the acting out of a method using a unit measure. Example there are a hive of bees, I count the bees using my unit measure | as ||||||.

Definition 1.2.
Totalling is the explicit use of number to sum a count, I sum my count |||||| using my numerical system $1, 2, 3, 4....$ *as* 6*.*

I shall now introduce the problem.

Imagine you were asked to calculate the i^{th} value of e^x in a Taylor Series that produced a given sum $e^{x_{T_s}}$. Counting and totalling have already been established and the problem requires you to keep count whilst calculating your total.

Your count (totalled) would look like this:

$$e^{x_i} = [1, x, \frac{x^2}{2}, ...e^x_s] \tag{1.1}$$

And your total would look like this

$$e^x_T = [1, 1 + x, 1 + x + \frac{x^2}{2}, ...e^x_{Ts}] \tag{1.2}$$

Your check would be the given sum, e^x_{Ts} and you would count and total until you reached your sum. The problem is solved without a hitch and you hand back to me, the count, total and i^th value that calculates said total.

You are than asked to total to the given sum whilst counting fewer steps than those you have totalled. You begin in earnest as the problem although difficult seems possible. After many attempts you calculate a method by with you can reach the given sum in fewer steps than it would be to count it exponentially and you hand me your paper overjoyed. I now turn to you and ask what the i^th value of the sum is and you step back aghast as by calculating a more efficient method you have left yourself unable to tell me what the i^{th} value is.

*Submitted to the editors 02/09/2020.

And this is the crux of the problem. Although it is possible to count to e_s^x in fewer steps than to count e_i^x it is impossible to do so whilst keeping a full count of e_i^x. And although possible to reach the sum of e_{Ts}^x in fewer steps than the summation (and therefore count) of e_i^x it is also impossible to do so while keeping a full count of e_i^x and therefore it is impossible for $NP \neq P$.

REFERENCES

[1] Cook. A.S, "The P versus NP Problem" *Clay Mathematics*,
[2] Samuels. J.I, "Proof the P $\neq$ NP" *preprints.org*