Specialist English: Assignment 2

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This second assignment (worth 5% of the final mark) is to explore how the English language interacts with mathematics and LaTeX. Problems 2 and 3 are from actual papers that were published; downloading and looking at these papers will help you understand the context (you won't need to read the whole paper).

Please write your assignments in LaTeX and email me the final .pdf (I don't need the LaTeX .tex file).

In this and the remaining assignments, my marking will be affected by (a) your English writing, (b) your LaTeX typesetting, (c) your mathematical presentation, and (d) your understanding of the underlying computer science. Basically, I will "peer review" your assignments.

Problem 1 For both of the following two snippets, explain how the mathematics and English are mismatched. [2 marks]

When $n \geq 4$, we have
$$n^3 \geq n^2 + 10n. \tag{1}$$
Equation (1) implies that $m^6 \geq m^4 + 10m^2$ whenever $m \geq 2$.

The proposed method improves the run time by a factor of 55%.

Problem 2 The following paragraph is from a recently published paper.

Kronecker delta function: In mathematics, the Kronecker delta function is a function of two variables, usually just positive integers. The function is 1 if the variables are equal, and 0 otherwise:
$$\delta_{x,y} = \begin{cases} 1, & x = y \\ 0, & x \neq y \end{cases} \tag{1}$$

(Source: Fu, Yu, Xu, *A Secure Algorithm for Outsourcing Matrix Multiplication Computation in the Cloud*, Security in Cloud Computing, 2017. `dl.acm.org/citation.cfm?id=3055263`)

1. Identify four distinct things wrong with the above paragraph. [2 marks]

2. Rewrite this paragraph to fix (at least) those four problems. [2 marks]

There's more than four things wrong with this paragraph (and the entire Fu et al. paper is just as bad as this paragraph), but I'm not expecting you to fix everything. (Note: The above snippet uses a `\begin{cases} ... \end{cases}` environment.)

Problem 3 The following is another snippet from another paper.

Table 1 shows the list of symbols used in the model.

$$\gamma_t = \gamma_{un} + \gamma_{deg} \tag{1}$$

$$\lambda_{un} = 1 - \frac{\alpha}{100} \tag{2}$$

$$\gamma_{un} = (\lambda_{un} * \Psi_{p_i}) - \frac{\beta}{\alpha} \tag{3}$$

In eq. 1, γ_t represents the total amount to be refunded. γ_{un} is the reimbursement amount of unutilized resources. γ_{deg} is the degradation factor to be paid on SLA violation.

(Source: Aazam, Huh, *QoS Degradation based Reimbursement for Real-time Cloud Communication*, All-Web Real-Time Systems, 2017. `dl.acm.org/citation.cfm?doid=2749215.2749220`)

1. Describe one way the LaTeX typesetting could be improved in the above snippet. [1 mark]

2. Describe one way the presentation of mathematics could be improved. [1 mark]

3. Identify two distinct problems with how mathematics is used within sentences in the above snippet. [2 marks]

By "distinct problems", I don't want the same problem occurring in two slightly different ways.