

MTH5117 Mathematical writing: Coursework 0

Franco Vivaldi

DEADLINE: Friday of week 2, at 11.30 am.

This coursework is designed to help you familiarise yourself with electronic typesetting of coursework, and its submission via the Blackboard environment. Cwork 0 will not be marked and it is not part of the assessment of this course. The first marked coursework will be cwork 1.

Electronic submission involves: (i) preparing a document; (ii) convert it to pdf format; (iii) log in into Blackboard, and submit it.

You are advised to read the coursework regulations, on the web.

The symbol [∄] indicates that the written material should contain *no mathematical symbols whatsoever*, apart from numerals.

Problem 1. Consider the following problems.

1. Show that if n is an odd integer, then $n(n^2 - 1)$ is divisible by 24.
2. Show that if $2^n - 1$ is prime, then n is prime.
3. Let a, b be integers, and let g be the greatest common divisor of a and b . Show that a/g and b/g are relatively prime.

Give a definition of all the mathematical terms that appear in the formulation of these problems.

[Can you do this without looking it up? *After* writing down your definitions, get hold of some source, and evaluate the accuracy of your work.]

Problem 2. Write five questions about fractions. [∄]

Problem 3. Write three questions about prime numbers, of which you know the answer. Then ask three questions of which you don't know the answer. [∄]

[Can you do this without Wikipedia?]

Problem 4. Read the first page of chapter 1 of the web-book. Then read again your answer to the previous two problems, and see if you can improve them.

Problem 5. Typeset the following equation

$$f(x) = \frac{1}{x^2 + 1} \left(e^{-x} + \sum_{k=1}^{\infty} \frac{1}{k^6} \right).$$