Math 105—Calculus I Project 2
a leg up on legal issues...

After your successful "debut" as mathematicians at the eminantly successful IMC, Inc. contracting firm, accolades have poured in. And, equally as promising, there appear to be additional contracts arriving as well. The latest to which you have been assigned is one that arrived just recently from Hangemhi, Inc. (a legal consulting company known to have some affiliation with the world-wide MPC, Inc. conglomerate). This has been referred to you on the basis of your past success with medically related contracts... The letter you received from them follows.

Hangemhi, Inc.

Suite 101, Boldledge Business Park
Lonlinc, SK
04685

26 February, 1996

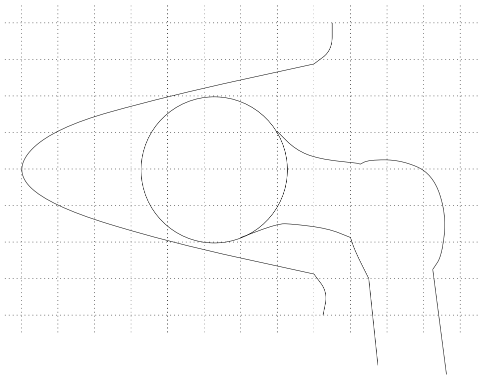
Independent Mathematical Contractors, Inc.
Suite 2, Strawmarket Business Plaza
Lonlinc, SK 04685

Dear IMC:

As you may know, Hangemhi, Inc. recently won a case that received national attention—the infamous "case of the rapidly plummeting client," in which it was alleged that our client had lept from a window to a busy street below. Following its resolution, however, we find ourselves in the position of addressing the legal needs of a series of "copy-cat" clients who are accused of placing untoward stresses on their respective bodies in the course of activities which, as you will understand completely, we are not in a position to speculate with you at this juncture.

As in the infamous "plummeting client" case, we are first attacking the scientific feasibility of the alleged activities. In particular, one of our clients is purported to have succeeded in a series of maneuvers which are wholly unlikely to have been possible given their recent hip replacement. A partial diagram of the replaced joint appears below in figure 1.

Figure 1



We were able to discover from a medical research company with which we have ties that the stresses that the joint would sustain in course of the alleged maneuvers are related to the rate at which the gap between the "ball" and "socket" of the joint changes as different positions in the joint are considered. Therefore, we need an analysis from you of how large this rate of change is likely to be at various positions in the joint, and an estimate of what the maximum rate is likely to be.

As specified in your contract, your report should be submitted by the 11th of next month, as the case is to go to court sometime around the close of that week.

If you should find in the course of your investigation that you have questions regarding this project, you are to contact Dr. Gavin LaRose, our firm's consulting scientist (who is, unfortunately, only working for us part-time around his job with Chemproc, Inc., and hence is unable to resolve this problem for us directly) with the other members of your investigative team; he will be more than willing to assist you. You should further contact him (also as a team) by the 4th of March to report on your progress—*failure to do so will result in a 5% reduction of your contract payment.*

Yours sincerely,

Claire N. "C.D." Arro, Partner
Hangemhi, Inc.

Encl: Technical report requirements

Technical Report Requirements

All reports submitted to Hangemhi, Inc. should be written so that all members of the legal team using the report can understand and apply the information contained therein. These legal team members are all experts in law, but have little recent experience in mathematics. They should therefore be assumed to remember essential precalculus and algebra concepts, but, sadly, little more.

Reports should further:

- Be written in the first person plural (e.g., "We found the requisite data from the figure…").
- Include mathematical formulas in the the text of the body of the report as appropriate to describe the methods and results obtained. (While the report must be typewritten, it is fine to neatly hand-write formulas if that significantly simplifies its generation.)
- Clearly explain how the mathematical formulas that are included bear on the problem being solved.
- Consist of
  - An *Introduction*, describing the problem to be solved, and an indication of the mathematical method used to solve it.
  - A *Body*, describing the mathematical problem that was solved to answer the question(s) posed in the introduction, and the solution to it.
  - A *Conclusion*, summarizing the results obtained from the solution described in the body and clearly stating their relevance to the original problem as described in the introduction.
- Be $2\frac{1}{2}$–5 pages in length.