Third Lab For M242, Summer 2000

The lab is due on Thursday, June 15, 2000. You may have oral discussions with any one in this section but the Maple work must be your own. Absolutely no work is to be shared. Please be warned, all parties to any violation of this rule will be held equally responsible and will get an **F** in this course.

Topic : Limits and L'Hopital's Rule

Problems

1. (a) [5] Compute by hand
$$\lim_{x \to 0^+} \left(1 + \frac{1}{x}\right)^x$$
   (b) [5] Using Maple examine the values of the appropriate function to convince yourself that the answer to the previous part is correct.

2. (a) [5] Compute by hand
$$\lim_{x \to \infty} \left(1 + \frac{1}{x^2}\right)^x$$
   (b) [5] Examine the values of the appropriate function to check that the answer to the previous part is correct. This becomes time consuming as x gets larger.
   (c) [10] So we replace the above limit by an equivalent limit. Let $t = 1/x$, then as x approaches ∞ we will have that t approaches 0. So replace the above limit by a limit as t approaches 0. Compute this t limit by hand and then check this t limit numerically by using various values of t.

What To Hand In

Submit a printout of your Maple worksheet as well as the hand written part - stapled together. The report must be organized as explained in section 2.1 of the tutorial.

Rakesh