Remember that homework must be handed in at the beginning of class, stapled, on $8\frac{1}{2}'' \times 11''$ paper, and have your complete name and student number in the top right hand corner in order to receive full marks.

Homework Assignment # 1a
Due: 2006–09–18 (Monday)

1. Compute the following:

   (a) $\lfloor -13/5 \rfloor$

   (b) $\lfloor +13/5 \rfloor$

   (c) $\lceil -13/5 \rceil$

   (d) $\lceil +13/5 \rceil$

   (e) $-\lceil -\lfloor -\pi \rfloor \rceil$

   (f) $\sum_{i=1}^{4} 3$

   (g) $\sum_{i=1}^{4} \pi$

   (h) $\sum_{i=1}^{4} i$

   (i) $\sum_{i=1}^{3} \left(\sum_{j=1}^{3} 1 \right)$

   (j) $\sum_{i=1}^{3} \left(\sum_{j=1}^{3} i \right)$

   (k) $\left(\sum_{i=1}^{13} i \right) - \left(\sum_{i=1}^{12} i \right)$

   (l) $\left\lfloor \sum_{i=1}^{8} \pi \right\rfloor - \sum_{i=1}^{8} \lfloor \pi \rfloor$

   (m) $\prod_{i=1}^{5} \left(2 \right)$

   (n) $\prod_{i=1}^{20} \left\lfloor 1 + \frac{i}{17} \right\rfloor$

   (o) $\sum_{i=0}^{4} \left\lfloor \frac{5}{2^i} \right\rfloor$

   (p) $\binom{6}{0}$

   (q) $\binom{5}{3}$

   (r) $\sum_{i=0}^{3} \binom{3}{i}$

   There is no need to explain calculations that you find obvious, but the marker may be able to give part marks if you show your work but make a silly mistake.

   Greek Letters

2. For each of the following questions write down both the symbols and their names spelled out in English.

Example: The alphabet is named after which two Greek letters?

Answer: α (alpha), and β (beta).

(a) Physicists like to use Greek letters. When working with three dimensional angles, they often use the three Greek letters starting at "zeta". What letters are used?

(b) Physicists measure electrical resistance in Ohms. Take a guess at which capital greek letter is used as the symbol for Ohms.

(c) Names of metric units usually use latin letters, for instance: TW (tera-watt — 10^{12} watts), MW (mega-watt — 10^6 watts), mW (mill-watt — 0.001 watts). However the symbol for "micro" (meaning 10^{-6}) is greek, because 'M' and 'm' are already taken. What greek letter is used?

Read *Gersting* Section 1.1 first

3. When Alonzo Church first started working on the lambda-calculus, he used the the capital Greek letter, but nowadays theoretical computer scientists usually use the lower-case letter. Why do you think that is?

Homework Assignment # 1b
Due: 2006–09–22 (Friday)

from *Gersting* (sixth edition):

4. Section 1.1: Questions: 3, 9 (8 in edition 5), 10 (9 in edition 5), 17 (14 in edition 5), 21 (18 in edition 5).