

MthT 430 PreTest

In class August 29, 2007 – Turn in September 5, 2007

Group Work Rules:

- You are encouraged to work together!
- Away from the group, do your own neat write up of the problems.
- Acknowledge the group members and any other person/source you use.

PreTest

The following problems include definitions and proofs which will be developed later in the course. Use your [group's] current understanding of *functions*, *limits*, *continuous functions*, *derivatives*, ..., to try the following problems.

1. $\lim_{h \rightarrow 0} \frac{e^h - 1}{h}$.
2. $\lim_{x \rightarrow 0} \frac{\sin(x)}{x}$.
3. Express $.232323\dots$ as a rational number. Hint: $.232323\dots = 23\frac{1}{10^2} + 23\frac{1}{10^4} + 23\frac{1}{10^6} + \dots$
4. (True/False) There is a continuous function $f_1(x)$, defined for all real numbers x , which takes on every value exactly once.
5. (True/False) There is a continuous function $f_2(x)$, defined for all real numbers x , which takes on every value exactly twice.
6. (True/False) There is a continuous function $f_3(x)$, defined for all real numbers x , which takes on every value exactly three times.