Math 290
Week 3 Lab

Intructions: Use LaTeX to typeset a document containing each component described below. Turn in your lab by emailing it to jamesju@mnstate.edu. You should email both your raw TeX (.tex) file and your compiled document (in either .ps or .pdf form). This assignment is due by 4:00pm next Monday. You will be graded on both your raw TeX code and the accuracy of your compiled document.

1. Set up the page layout as you did in your previous lab.
2. Typeset each of the following (pay close attention to which display mode is being used):
   (a) $\lim_{x\to 0^+} f(x) = \frac{\pi}{2}$
   (b) $A = \sum_{i=1}^{N} \frac{1}{2} (r_i)^2 \, \Delta\theta_i$
   (c)
   $$A = \int_{\theta_1}^{\theta_2} \frac{1}{2} \left[r_o^2 - r_i^2 \right] \, d\theta$$
   (d)
   $$f^+(x) = \liminf_{h\to 0^+} \frac{f(x+h) - f(x)}{h} \tag{1}$$
   (e)
   $$\left\{ \left[\left| \frac{\bigcup_{\lambda\in\Lambda} A_\lambda}{\bigcap_{\lambda\in\Lambda} \overline{B}_\lambda} \right] \right\} \Bigg)$$
3. Typeset each of the following expressions. You will need to hunt down some special symbols for most of these.
   (a) $\hat{s} + \tilde{t} + \bar{u} + \dot{v} = \acute{w}$
   (b) $12\vec{\imath} + 8\vec{\jmath} - 3\vec{k} - \left(3\vec{\imath} - 5\vec{\jmath} - 4\vec{k}\right) = 9\vec{\imath} + 13\vec{\jmath} + \vec{k}$
   (c) $\widehat{xyz} + \widetilde{abc}$
   (d)
   $$\overline{\overline{x^2} - \overline{y^2}} + \underleftarrow{\underline{x_2} - \underline{y_2}}$$
   (e) $\binom{n}{k} \stackrel{\text{def}}{=} \frac{n!}{k!\,(n-k)!}$
   (f) $\underbrace{x \cdot x \cdot \ldots \cdot x}_{5} = x^5$
4. Typeset the following equations:

$$B_1 = S_1 \cap \ldots \cap S_m \tag{2}$$
$$B_2 = S_1' \cap \ldots \cap S_m' \tag{3}$$
$$B_1 \cap B_2 = (S_1 \cap \ldots \cap S_m) \cap (S_1' \cap \ldots \cap S_m') \tag{4}$$