Math 127
Homework 7 due on Wednesday, 3/29.

1. Explain why you think that the Euler number of a surface does not depend on a given cell division of the surface.

2. Find the Euler number of the connected sum of n projective planes. (Hint : Use the subdivision of that space into 2 2n-gons.)

3. Name the following surfaces. Use Euler number to do so. When determining the Euler number it is necessary, for full credit, to give a more involved cell division than the obvious one. Explain your reasoning for all the conclusions.

a)   b)   c)
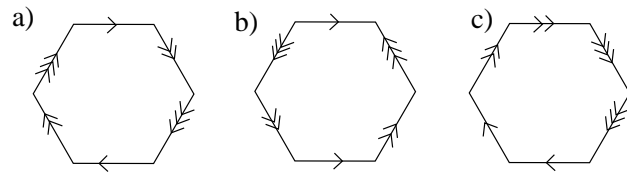
4. Derive the formula for the area of a hyperbolic n-gon. Explain all your claims. Draw pictures if necessary.