Math 10460 - Honors Mathematics II
Homework 11a - Due Wednesday, April 13

You must show your work in all of the problems!!!

Recall that S^2 is the sphere, $\mathbb{T}$ is the torus, and $\mathbb{K}$ is the Klein bottle.

(1) Draw a polygon with edge identifications that gives the surface $2\mathbb{T} = \mathbb{T}\#\mathbb{T}$.

(2) Draw the curves on $2\mathbb{T}$ corresponding to the edges of the polygon (like we did in class with $\mathbb{T}$). In class, we called the edges a, b, c, and d.

(3) Find a polygon with edge identifications that gives the surface $3\mathbb{T} = \mathbb{T}\#\mathbb{T}\#\mathbb{T}$. How many edges does it have?

(4) If we wanted to find a polygon whose edge identification gave $g\mathbb{T} = \underbrace{\mathbb{T}\#\cdots\#\mathbb{T}}_{g\text{-times}}$, how many edges do you think it would have? Why?