Prop^n 7.4 If $\tilde{\Sigma}'$ is obtained from Σ' by attaching a handle then

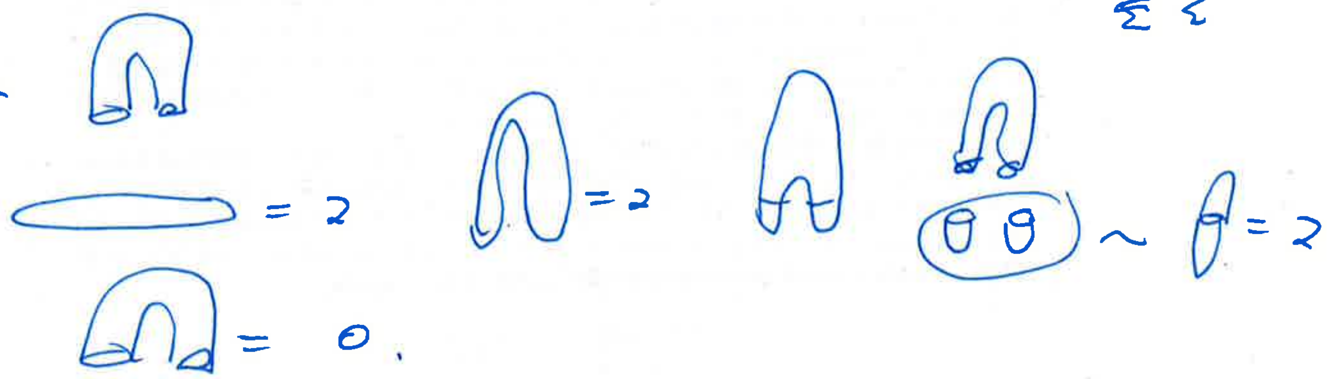
$$\frac{1}{2\pi}\int_{\tilde{\Sigma}'} R\,v\,d = \frac{1}{2\pi}\int_{\Sigma'} R\,v\,d - 2$$

Proof

$$\frac{1}{2\pi}\int_{\tilde{\Sigma}} R\,v\,d = \frac{1}{2\pi}\int_{\Sigma} - 2$$

Attach

But



$\therefore$ lost $= 2$ //

Corollary 7.5 If Σ is obtained from S^2 by attaching g handles then

$$\frac{1}{2\pi}\int_{\Sigma} R\,v\,d_{\Sigma} = 2 - 2g.$$

It is a Th^m in topology that every surface in $\mathbb{R}^3$ that is closed & bounded is ~~dato~~ homeomorphic to an S^2 with g handles.

7.1 Tessellations

Def^n 7.6 Let Σ be a surface in $\mathbb{R}^3$. A tessellation of Σ is a decomposition into vertices, edges & faces such that each face is a polygon.

A tessellation where all faces are triangles is called a triangulation.

Def^n 7.7 If T is a tessellation of Σ the define

$$\chi(\Sigma, T) = \#\text{faces} - \#\text{vertices} - \#\text{edges}$$

Euler class of Σ, T.

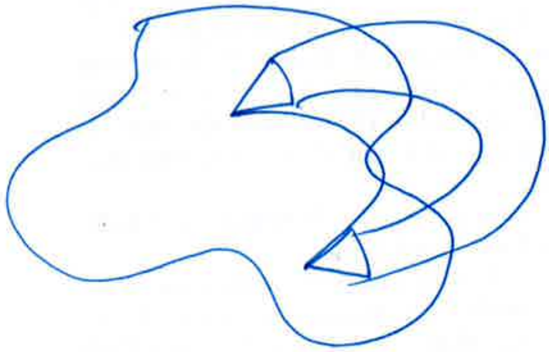
Prop^n 7.8 If T, T' are two tessellations of Σ $\chi(\Sigma, T) = \chi(\Sigma, T')$

<u>Propn 7.9</u>

If Σ is obtained from S^2 by adding g handle $\chi(\Sigma) = 2-2g$

<u>Proof</u>

$\chi(S^2) = 2$



-2 faces. add 3 edges $+$ 3 faces

$\chi \to \chi - 2$. //

<u>Thm 7.10</u> G-B Thm.

If Σ is a closed oriented surface

$$\frac{1}{2\pi}\int_{\Sigma} R \, v\, d = \chi(\Sigma) = 2 - 2g(\Sigma)$$

<u>Friday</u> : * Revision lecture

* Exam info handout
* Course summary handout
* Marks handout.
* Ass 6 solutions maybe.