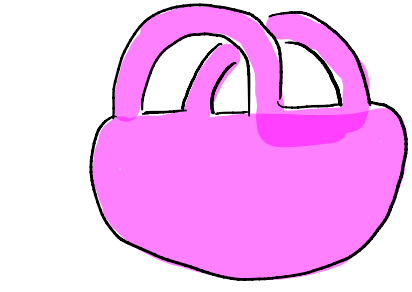
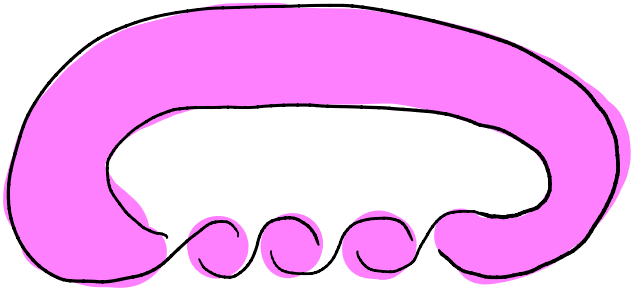
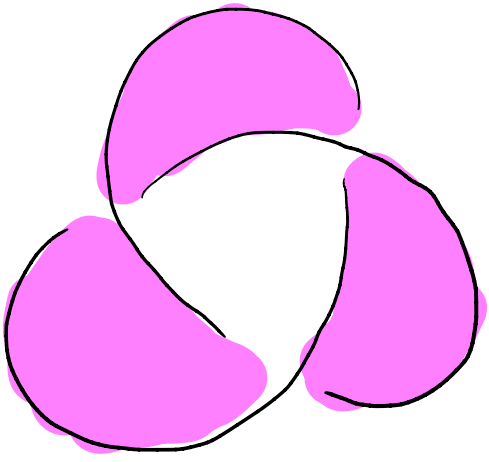
Problems:

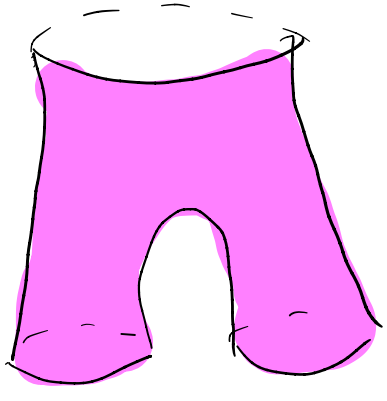
(1) (a) Identify the following surfaces up to homeomorphism (in terms of the surfaces described by the classification of surfaces.

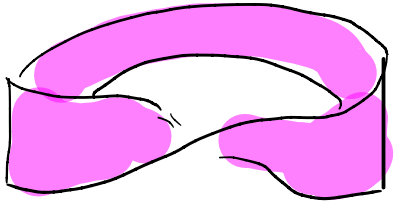
(b) Compute their Euler characteristic.

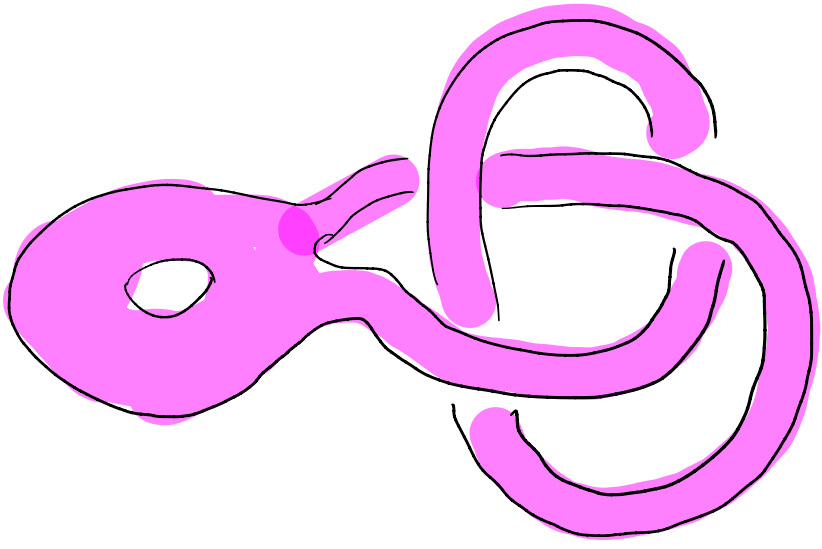


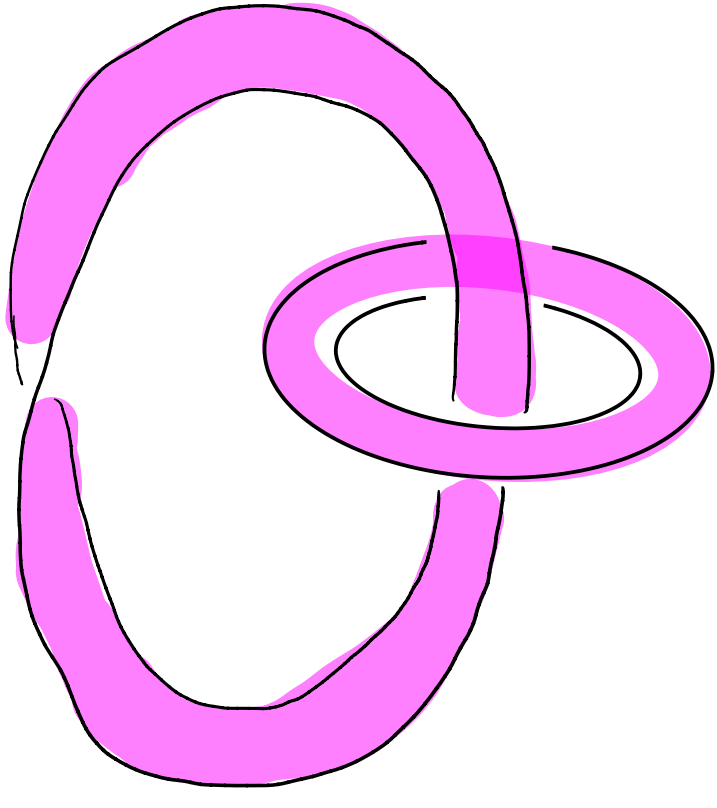












(2) Prove the above surfaces are OR are NOT orientable by showing they are 1-OR 2-sided.

(3) Calculate the Euler characteristic of the surfaces listed in the lecture notes.

(4) Compute the Euler Characteristic of

(a) $\#_n P = P \# P \# \cdots \# P$

(b) $\#_n P - \left(\bigcup_{i=1}^{m} D_i\right)$

(c) $\#_n T^2 - \left(\bigcup_{i=1}^{m} D_i\right)$

(d) $S^2 - \left(\bigcup_{i=1}^{m} D_i\right)$