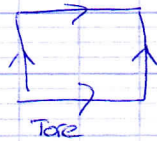
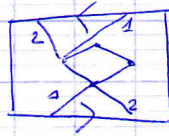


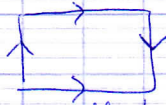
③



Tore



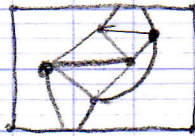
Ruban de Möbius



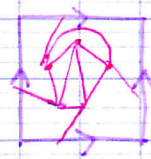
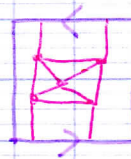
Bouteille de Klein



Plan projectif



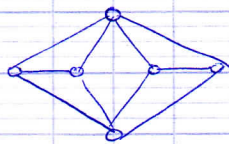
Correction:



$K_7$  est plongable dans le tore

#### Exercice 4

①



planaire

②



Pas planaire

#### Exercice 5

$$① S = \sum_{F: \text{face de } G} (\text{nbr d'arêtes de la frontière de } F)$$

$$\leq 2m$$

$$S \geq g \times f$$

$$\text{Donc } 2m \geq g \times f$$

Par Euler :  $n - m + f = 2$

$$\text{Alors } 2m \geq g(2 - n + m) \Rightarrow \boxed{g \geq \frac{2m}{m - n + 2}}$$