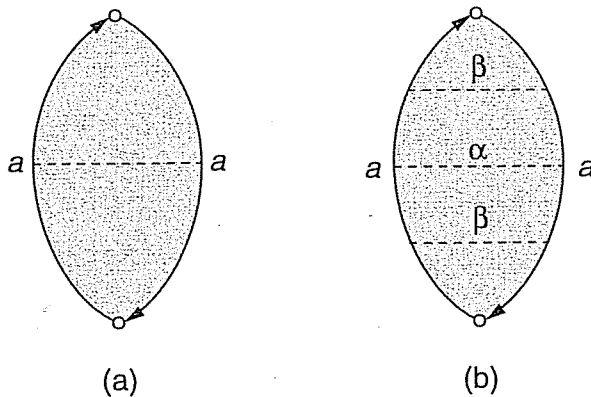


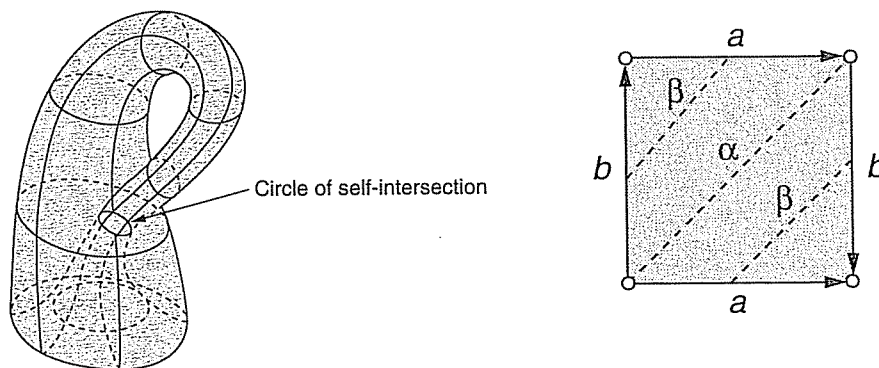
## ADDITIONAL PROBLEMS

**Problem 1.** What do you get when you cut a projective plane in half, as shown below in (a)?



**Problem 2.** What do you get when you cut a projective plane along the two loops  $\alpha$  and  $\beta$  as shown above in (b)?

**Problem 3.** Slice the space model of the Klein bottle, as drawn below, along the vertical plane that splits it into two symmetric halves. What are the two pieces obtained?



**Problem 4.** What do you get when you cut a Klein bottle along each of the two loops  $\alpha$  and  $\beta$  as shown above?