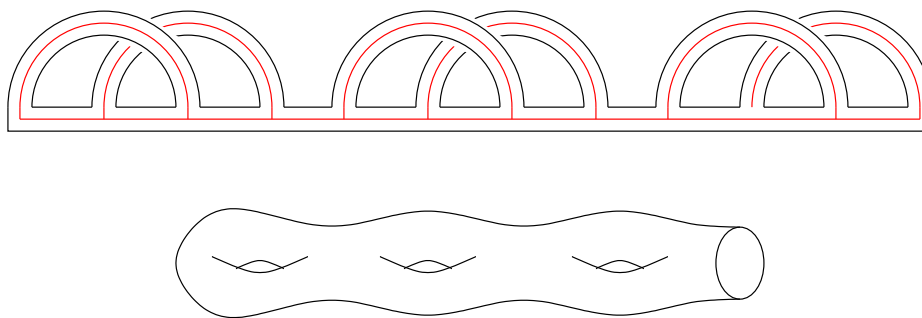




**Problem 1.** If the upper black is homeomorphic to the lower black, what's the image of red under this homeomorphism?



**Problem 2.** Prove that if the Gordian distance between the knots  $K_1$  and  $K_2$  is 1, then the difference between their genera is at most 1. Namely, that

$$|g(K_1) - g(K_2)| \leq 1$$

Ouch! This is wrong! For example, the unknotting number of the knot  $6_2$  is 1, but its genus is 2. Sorry.

**Problem 3.** Prove that a knot is ribbon iff for some  $n > 0$  there is a tangle  $T$  with  $2n$  strands whose skeleton is as in the figure below such that  $\tau(T)$  is the untangle and  $\kappa(T) = K$ , where  $\tau$  and  $\kappa$  are defined by the figure below.

