(1) • List the names of the five axioms.
   • Which ones are not true on the cylinder?
   • Give the statement of each axiom you listed in part (2). If the axiom has two parts, state them both separately, even if one part is true. *(This statement should be as close as possible to the statement in the handout.)*
   • Now modify each of the statements that you gave above to make it true for they cylinder. Try to give the best and most complete statement that you can, so that you could use these axioms for proofs on the cylinder.

(2) You have been given a surface. Two different curves – type (a) and type (b) – are described on the board. *(Ask me if you don’t understand the picture.)* For each curve, is it a geodesic or not? In order to get full points, state as many reasons for each answer as you can.

(3) • State the Isosceles bisector theorem.
   • Is it true or false in $\mathbb{H}^2$?
   • Give a proof or a counterexample.

(4) • Define isometry.
   • Is the composition of two isometries always an isometry?
   • If no, find a counterexample. If yes, give a proof.

(5) • State the crossbar theorem
   • Is it true or false on the cylinder?
   • Give a proof or a counterexample.