

Typically reading assignments expect only a superficial understanding of the material. They are intended to give you a first look at material we'll explore in more depth in class. Occasionally, however, you will be asked to thoroughly understand something from the reading which we will not go through in class.

Most of the readings are from Bonahon, some are from Schwartz and sometimes you are asked to read online materials. Answer the following questions and turn in on the due date. The questions are intended to help you focus on what you are expected to get out of the reading and to ensure you are prepared for class. Your answers need not be long, but they should be thoughtful.

(1) Schwartz 10.4, 11.1 - 11.3

- (a) What is an inner product?
 - (b) What is a Riemannian metric?
 - (c) Explain how the euclidean metric, the round metric, and the hyperbolic metric are related to Riemannian metrics.
-

(2) Schwartz 10.7 - 10.8

- (a) What is the disk model of the hyperbolic plane?
 - (b) Do Exercise 8.
 - (c) How does the Riemannian metric on the disc model compare to the Riemannian metric on the upper half plane model?
 - (d) How can you determine the area of a hyperbolic triangle just by knowing its angles?
-

(3) Bonahon 2.6 - 2.7.

- (a) What's the point of Lemma 2.19?
 - (b) Explain the role that differentials play in showing that the hyperbolic plane is isotropic.
 - (c) How do we convert results for the upper half plane model to results for the disk model?
-

(4) Read the blog essay [Random Turtles in the Hyperbolic Plane](#) by Danny Calegari.

(Warning: This essay gets rather technical. Do not feel like you need to understand the technicalities.)

- (a) Share some of the interesting things you learned from the essay.
- (b) What questions does the essay provoke? What would you be interested in pursuing further?
- (c) Who is the intended audience of the essay? What qualities of the writing make the author successful or unsuccessful at reaching that audience.
- (d) Choose two other possible audiences for a blog post on the same topic as the essay you read. Say what those audiences are and, for each, how the essay might be structured differently in tone and content if it were written for that audience.