

MA 314 Homework 6: Our only fear is sphere itself

1. READING

Read Gary Antonick's blog post on hyperbolic geometry "The Non-Euclidean Geometry of Whales":

<http://wordplay.blogs.nytimes.com/2012/10/08/whale/>

2. READING RESPONSE

(The purpose of this blog reading is twofold: First, you get to read an example of a well-written blog essay on a geometric topic – should be helpful for when you have to write your own! Second, you get to learn some interesting facts about geodesics, a central concept of this course. The questions below are intended to have you explicitly consider the qualities of good mathematical writing.)

- (1) Share some of the interesting things you learned from the essay.
- (2) What questions does the essay provoke? What would you be interested in pursuing further?
- (3) Who is the intended audience of the essay? What qualities of the writing make the author successful or unsuccessful at reaching that audience.
- (4) 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.

3. MORTAR

- (1) Exercise 3.1 on page 50 of Bonahon

4. BRICKS

- (1) Do Exercise 3.2 on page 51 of Bonahon. We proved this result in class using linear algebra. The problem outlines a purely geometric proof of the fact. You should draw pictures to understand what he is saying. Also, in part (a), there is a typo: the Π in the last line of part (a) should be a Π' .

- (2) Do Exercise 3.4 of Bonahon. (Where he suggests adapting Thm 2.11, instead adapt the proof of the classification of 2-dimensional euclidean isometries.)