

## Project Four MTH 211 Fall 2009

Ayman Badawi

### 1 Group: Vishal Sawlani, James Moussa , Odulana Adetayo

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic square inside  $H$  so that one of the diagonal has a hyperbolic length  $\ln(9)$ . What is the hyperbolic length of each side. Find the hyperbolic angles of the square you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 2 Group: Hiba AlSafi, Dana Nabtiti, Masa Afaneh

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic equilateral triangle inside  $H$  so that each vertex of the triangle lies on an ordinary circle with radius 2. What is the hyperbolic length of each side. Find the hyperbolic angles of the triangle you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 3 Group: Dalia AlOurfali, Noor AbdulHamid, Suzan Momani

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a triangle inside  $H$  so that none of the sides passes through  $O$  and one of the angles of the triangle is  $30^\circ$  Find the hyperbolic angles of the triangle you constructed, also find the hyperbolic length of one side. [Hint: Think!!! YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 4 Group: Suheyla Takesh, Leen Rihawi, Aman

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic regular 5-gon inside  $H$  so that each vertex of the 5-gon lies on an ordinary circle with radius 2. What is the hyperbolic length of each side. Find the hyperbolic angles of the 5-gon you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 5 Group: Farah Nasri , Seyede Pariya Manafi, Fadi Banani

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic regular 6-gon inside  $H$  so that each vertex of the hyperbolic 6-gon lies on an ordinary circle with radius 2. What is the hyperbolic length of each side. Find the hyperbolic angles of the 6-gon you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 6 Group: Nedal Machou, Dana Salam, Momen Abdalghani

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic triangle inside  $H$  so that one side has a hyperbolic length equals  $\ln(9)$  and one side has Euclidean length equals 2cm. Find the hyperbolic length of each side (note you already know the length of one side), also find the hyperbolic angles of the triangle you constructed. [Hint: Think!!! YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 7 Group: Khalda El Jack, Reyan Hanafi

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic triangle  $ABC$  inside  $H$  so that  $BC$  has a hyperbolic length equals  $\ln(9)$ ,  $AB$  has hyperbolic length = to the hyperbolic length of  $AC$ . Find the hyperbolic length of each side (note you already know the length of one side), also find the hyperbolic angles of the triangle you constructed. [Hint: Think!!! YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 8 Group: Sepideh, Shital, Safa

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic square inside  $H$  so that each side has a Euclid length equals  $2\sqrt{2}$ . What is the hyperbolic length of each side. Find the hyperbolic angles of the square you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### 9 Group: Samar Ali Abd Al Azez, Farah Faris Mudhefer, Sawsan Al Bahar

- (i) Let  $K$  be a circle with radius 4 and CENTER  $O$ . Draw an OUTSIDE square around  $K$  SAY  $ABCD$  such that  $AD$  is a diagonal and the midpoint of each side of the square lies on  $K$ . Draw the inversion of the square with respect to  $K$ . Find the length of the line segment between  $O$  and  $INV(A)$ . Also, find the length of the line segment between  $INV(A)$  and  $INV(D)$

### 10 Group: Vahid Farbod, Abdolreza Khalili, Seyedeh Negar Sanadizadeh

- (i) Let  $H$  be the horizon circle of radius 4 and Center  $O$ . Construct a hyperbolic regular 8-gon inside  $H$  so that each vertex of the hyperbolic 8-gon lies on an ordinary circle with radius 2cm. What is the hyperbolic length of each side. Find the hyperbolic angles of the hyperbolic regular 8-gon you constructed. [Hint: Think!!! You only need to find the hyperbolic length of one side and hyperbolic of one angle, YOU ARE ALLOWED to USE MARKED RULER, COMPASS, and protractor] STATE BRIEFLY THE STEPS. NO MATH JUSTIFICATION IS NEEDED

### Faculty information

Ayman Badawi, Department of Mathematics & Statistics, American University of Sharjah, P.O. Box 26666, Sharjah, United Arab Emirates.

E-mail: [abadawi@aus.edu](mailto:abadawi@aus.edu), [www.ayman-badawi.com](http://www.ayman-badawi.com)