

## Second Project MTH 211 Spring 2010

Ayman Badawi

### 1 Group: Elham Radmehr, Shaima Rizvi, Parastoo Najafi

- (i) You may use a MARKED RULER and a COMPASS ONLY. Construct a regular 10-gon so that each side is of length 2 cm. I DO NOT WANT TO SEE ANY MATH JUSTIFICATION. JUST WRITE DOWN the steps of construction CLEARLY.

### 2 Group: Rama Husamddine, Eman Saadie, and Maha Moustafa

- (i) You may use a MARKED RULER and a COMPASS ONLY. Construct a regular 12-gon so that each side is of length 2m cm. I DO NOT WANT TO SEE ANY MATH JUSTIFICATION. JUST WRITE DOWN the steps of construction CLEARLY.

### 3 Group: Najeeb, Shaza, Abeer, Nosheen Khan

- (i) You may use a MARKED RULER and a COMPASS ONLY. Construct a golden rectangle such that Height/Base = Golden Ratio. Inside the golden rectangle construct a golden spiral such that the radius of the first arc is 6 cm. What are the radius of the second arc and the third arc? I want the EXACT length of each radius (no approximation). Also give me the exact height and width of the golden rectangle you constructed.

### 4 Group: Ali sagban, Fatma almulla, Tulip Hazbar

- (i) Use a marked Ruler to draw a line segment of length 14 cm. Now hide your marked ruler and use only a compass and unmarked ruler to divide the line segment into six parts in order to construct two triangles: one is a golden acute triangle and the other is obtuse golden triangle. What is the length of each side (part)? I need the exact length not approximation.

### 5 Group: Amel A. Al Aboodi, Laila A. Kifayeh

- (i) Use a marked Ruler to draw a line segment of length 14 cm. Now hide your marked ruler and use only a compass and unmarked ruler to divide the line segment into four parts in order to construct a golden rectangle. What is the length of each side (part)? I need the exact length not approximation.

### 6 Group: Varsha Vineeth, Ban, Aisha

- (i) Draw a line segment of length 5cm and call it AB. Now hide your marked ruler. Use unmarked ruler and a compass only to construct an obtuse golden triangle over the base AB. Then partition the triangle into an acute golden triangle and an obtuse golden triangle. I DO NOT WANT TO SEE ANY MATH JUSTIFICATION. JUST WRITE DOWN the steps of construction CLEARLY.

### 7 Group: May Abrash, Fatema Zohara Moidu, Samima Saqib

- (i) Using Unmarked ruler and compass, can we construct an angle of 7.5 degrees? Justify your answer. Do not construct.
- (ii) Using Unmarked ruler and compass, can we construct an angle of 36 degrees? Justify your answer. Do not construct.
- (iii) If you are told that you can not construct an angle of 40 degrees, just using this piece of information give me quickly 7 more angles that we can not construct. Tell me why we can not construct an angle of 40 degree?
- (iv) Is there a regular 45-gon? if yes then state the steps of constructions (do not do the actual construction)

**8 Group: Fatima Al Za'abi, Fatima Ahmed, and Sana**

- (i) do number four on page 23.
- (ii) do number 5 on page 23, but modify the problem a little: Draw a line segment of length 5cm and call it AB. Now use unmarked ruler and a compass only to construct a golden rectangle over the base AB so that the width (base) = AB is longer than the height.

**9 Group: Roxanne A.Djaiji , Samir Saleh , Raad Moh'd Hajjar**

- (i) DO NUMBER 8 ON PAGE 23.
- (ii) DO NUMBER 9 (a) AND (b) on pages 23, 24.
- (iii) a triangle ABC is called a semi-golden obtuse triangle if  $AB = AC$  and  $AB/BC = \frac{1+\sqrt{5}}{4}$ . Draw a line segment of length 10 cm and call it DF. Hide your marked RULER. NOW use only unmarked ruler and a compass, can we divide DF into three parts in order to construct a semi-golden obtuse triangle? If yes, then find the length of each side and find the three interior angles of the triangle. If no, then tell me why not!!!

**10 Group: Rasha Dakkak, Nadia Azzam, Rola El Nounou**

- (i) CONVINCING me that we can not trisect an angle of 60 degrees using unmarked ruler and a compass. I gave you enough information in the class to answer such question.
- (ii) In general, we can not trisect every given angle using unmarked ruler and a compass. However, we can trisect an angle of 90 degree. So, draw an angle of 90 degrees, then use unmarked ruler and a compass to trisect the 90 degrees angle.

**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, www.ayman-badawi.com