MSU CSC 325 Fall 2015
Project 3. Genetic Algorithm for regular polygon
May 2, 2016
Due: 11:59pm, May 9

You are provided with a C++ genetic algorithm that evaluates chromosomes, **Proj3GAPolygon.cpp**

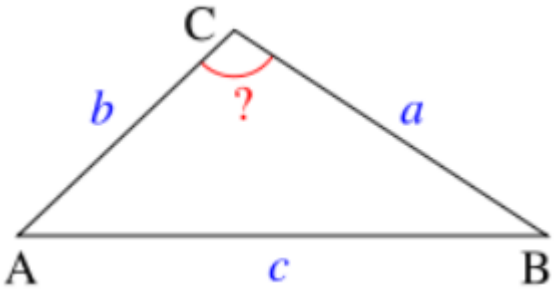
You wish to use the genetic algorithm to create regular polygons (polygons whose lengths of sides are all equal and whose interior angles are all equal).

Write a one-page document describing the "fitness evaluation" of an individual by the genetic algorithm.

Assume that a "chromosome" for the genetic algorithm is a vector of **tsize** integers. The polygon vertex with index 0 has its x coordinate at chromosome[0], and its y coordinate at chromosome[1]. In general, the polygon vertex with index j has its x coordinate at chromosome[j*2], and its y coordinate at chromosome[(j*2)+1].

Important: the "interior angle" of the polgyon may use vertices indexed at the "beginning" and "end" of the list --- for instance, the interior angle at vertex 0 uses data from a "high"-indexed vertex. Use the modulo operator to "wrap around."

From https://en.wikipedia.org/wiki/Law_of_cosines



$$\gamma = \arccos\left(\frac{a^2 + b^2 - c^2}{2ab}\right);$$

Extra credit, not required. Implement that "fitness evaluation" and use BearPlot to show the evolution of the "best" polygon as the genetic algorithm iterates.

Save the MS Word document on eccentric as **Proj2.doc**.

If you implement the extra credit, save your revised code on eccentric as **Proj3GAPolygon.cpp**