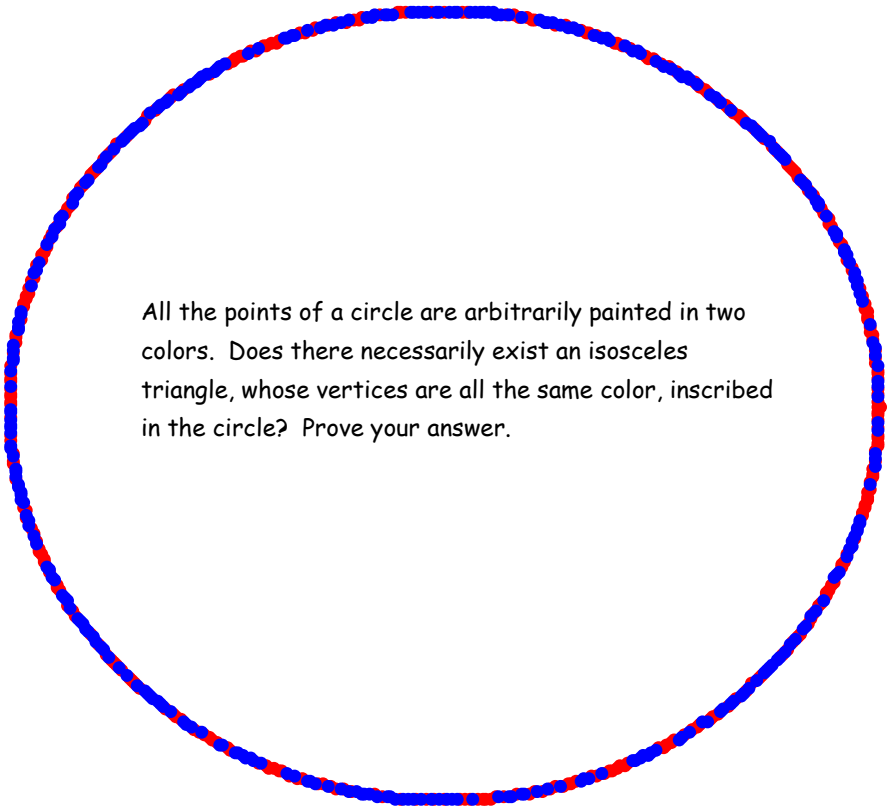
Problem of the Week #1

Assigned: 1300 2 Sep 10

Due: 1300 9 Sep 10



All the points of a circle are arbitrarily painted in two colors. Does there necessarily exist an isosceles triangle, whose vertices are all the same color, inscribed in the circle? Prove your answer.

Solution

Consider an inscribed regular pentagon. At least three of its vertices are on the same color because there are only two colors. These three (or any three) vertices of a regular pentagon form an isosceles triangle.