

Assignment 12

Post Date: 17 July 2017 **Due Date:** 19 July 2017 **Tutorial:** 19 July 2017

Please do not hand in any solutions by e-mail. We will discuss this assignment orally in the tutorial. Bonus points will be assigned based on contribution to the discussion.

Problem 1: Girth

6 Bonus Points

The *girth* of a graph is the number of edges on a shortest cycle.

- (a) For a given vertex v , show how to compute a shortest cycle that contains v .
- (b) Use (a) to compute the girth of a graph. What is the run time of your algorithm?
- (c) Use the planar separator theorem to improve the run time of your algorithm if the input is restricted to planar graphs.