Illinois Institute of Technology
Department of Computer Science

Homework Assignment 11

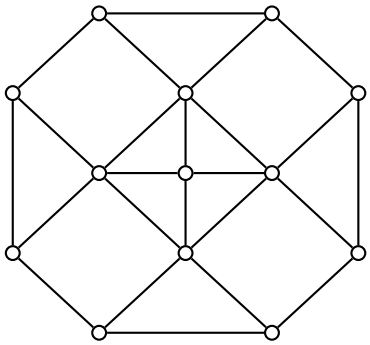
CS 535 Design and Analysis of Algorithms
Fall Semester, 2015

Rules for Homework

Remember, the rules listed on the first homework assignment apply to all assignments.

Due: Thursday, November 12, 2015

1. 34.4-7 on page 1086 of CLRS3
2. (a) Label all the variables, operators, and clauses in Figure 10 in the Tipover article.
   (b) Draw a Tipover diagram for the 3-SAT expression $(a \vee \bar{b} \vee c) \wedge (b \vee d \vee \bar{e})$.
3. Use the following crossover gadget to prove that determining whether a *planar* graph is 3-colorable is an NP-complete problem:



(*Hint*: Show that the gadget can be 3-colored, then use it to replace pairs of edges that cross in a planar embedding.)