

Graph Theory 2, MATH 5450, Spring 2023

Homework 6, 10.1. Plane and Planar Graphs

Due Saturday, February 25, at 11:59 pm

Write in complete sentences!!! *Explain* what you are doing and convince me that you understand what you are doing and why. Justify all steps by quoting relevant results from the textbook, class notes, or hypotheses. Do not copy the work of others; **do your own work!!!**

10.1.2(a). Prove that for planar graph G , every subdivision of G is planar. Use the formal definition of a planar embedding in terms of injection α , homeomorphisms h_i , and incidence function ψ . HINT: Show that if one edge is subdivided then the resulting graph is planar, then the general claim follows by induction.

10.1.6. Find a planar embedding of the graph given here in which each edge is a straight line segment. Give an explanation or justification that what you draw is the same as the given graph. (Wagner (1936) proved that every simple planar graph admits such an embedding.)

