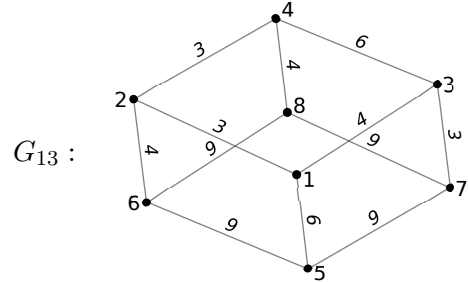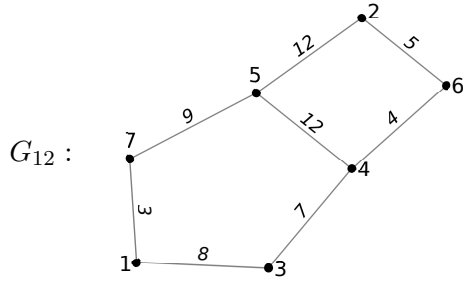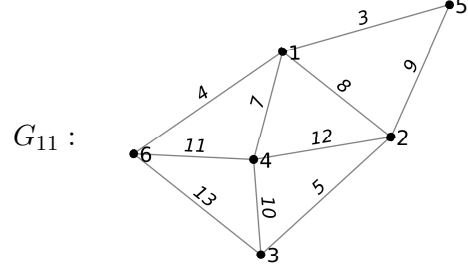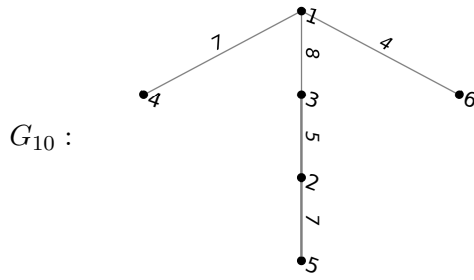# MATH.APP.270 Algorithms for graphs
Programming assignment 3: More graphs for testing   2022

The graphs that you should use for additional testing are the following:

The following table contains input files for these graphs.

graph	Python input file	Matlab input file
G_{10}	G10PythonMST.txt	G10MatlabMST.m
G_{11}	G11PythonMST.txt	G11MatlabMST.m
G_{12}	G12PythonMST.txt	G12MatlabMST.m
G_{13}	G13PythonMST.txt	G13MatlabMST.m

For each of these graphs the final MST is unique. This means that set of edges that must be removed is unique. In the following table we present the edges that must be removed from the original graph to obtain the MST.

starting graph	edges that must be removed to make MST
G_{10}	$\{\,\}$
G_{11}	$\{\,(3,6),(2,4),(2,5),(4,6),(3,4)\}$
G_{12}	$\{\,(4,5),(2,5)\}$
G_{13}	$\{\,(3,4),(5,6),(5,7),(6,8),(7,8)\}$

The cycles that are detected are unique. Nor is the order in which the cycles are detected. However, for each cycle detected, it must contain at least one edge in the set given in the above table. Of course the final cycle detected will contain precisely one of the edges. For

graphs G_{11}, G_{12} and G_{13} the following table contains **one possible** sequence of cycles.

starting graph	cycles detected
G_{11}	$\langle 2,1,4,2 \rangle, \langle 1,4,3,6,1 \rangle, \langle 4,6,1,2,3,4 \rangle, \langle 1,4,3,2,1 \rangle, \langle 2,1,5,2 \rangle$
G_{12}	$\langle 5,4,3,1,7,5 \rangle, \langle 4,6,2,5,7,1,3,4 \rangle$
G_{13}	$\langle 2,4,8,6,5,1,2 \rangle, \langle 5,1,2,6,8,7,5 \rangle, \langle 3,4,2,1,3 \rangle, \langle 4,8,6,2,4 \rangle,$ $\langle 4,8,7,3,1,2,4 \rangle$