This project asks you to find a minimum spanning tree in a graph.

In Spring 2009, the Women's Professional Soccer (WPS) league started its first season. As of the end of the 2010 season, there were seven teams in the league.

Atlanta Beat, Atlanta, GA

Boston Breakers, Boston, MA

Chicago Red Stars, Chicago, IL

FC Gold Pride, Bay Area, CA

Philadelphia Independence, Philadelphia, PA

Sky Blue FC, Piscataway, NJ

Washington Freedom, Washington, DC

The distances between the team stadiums is given in the following table (distances are courtesy Mapquest).

	Boston	Chicago	Bay Area	Phil.	NJ	Wash.
Atlanta	1108	694	2470	787	862	672
Washington	456	680	2805	141	218	
New Jersey	250	787	2911	99		
Philadelphia	337	740	2865			
Bay Area	3110	2147				
Chicago	984					

(a) Draw the complete weighted graph where the vertices the locations of each of the seven stadiums and the edges are labeled with the distance between the stadiums.

(b) Find a minimum spanning tree for your graph and draw it.

(c) In the minimum spanning tree, find the length of the path from the Boston Breakers to FC Gold Pride. Compare to the direct distance between the two stadiums. (Give your comparison as a percentage.)

(d) In the minimum spanning tree, find the length of the path from the Atlanta Beat to FC Gold Pride. Compare to the direct distance between the two stadiums. (Give your comparison as a percentage.)