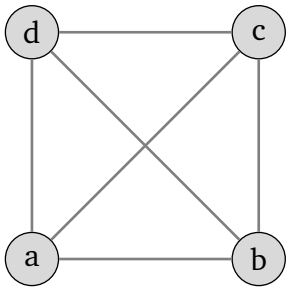
PLANARITY

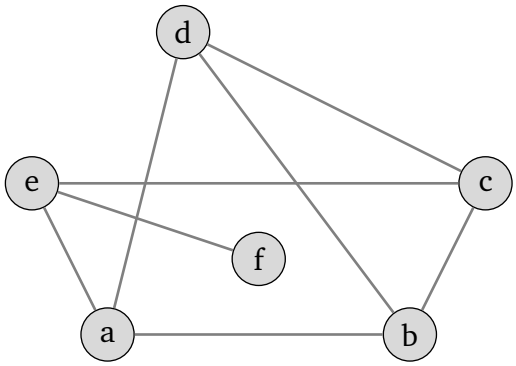
LAST NAME	FIRST NAME	DATE

1 (6 points)**.** Show that each of the following graphs is planar by finding an equivalent planar drawing.

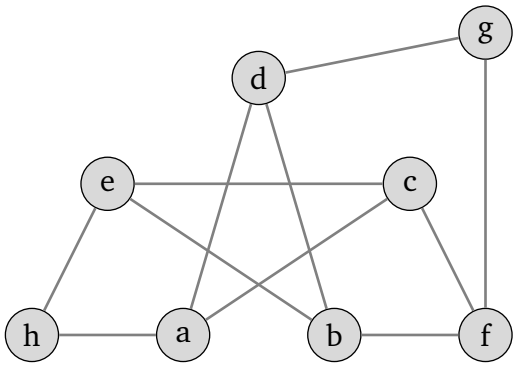
(a)



(b)



(c)



2 (2 points)**.** Prove that the following graphs are planar.

(a) $K_{2,4}$

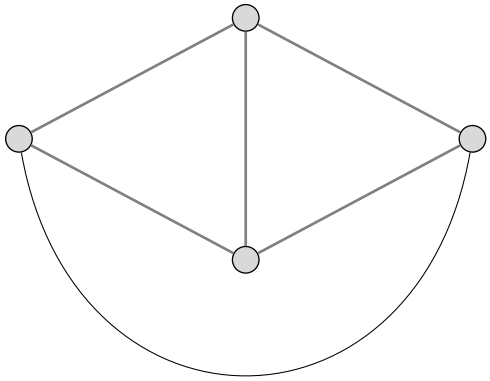
(b) Make a case that $K_{2,n}$ is planar for every positive integer n, for example, by providing a convincing generic drawing.

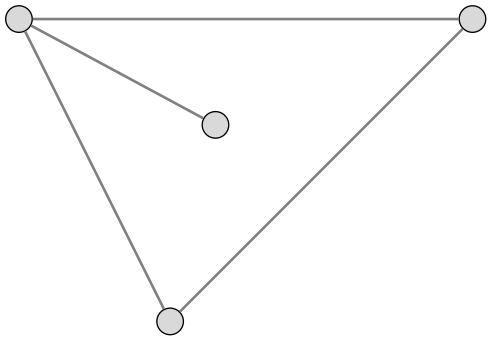
3 (4 points)**.** Draw non-planar graphs with the specified properties.

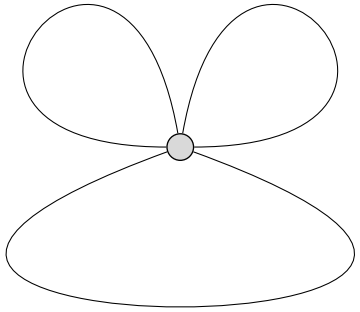
(a) 6 vertices and 9 edges.

(b) 5 vertices and 10 edges.

4 (6 points)**.** Construct the duals of the following graphs. You may draw over the graphs as you figure out the solution, but then your answer should still be re-drawn separately.

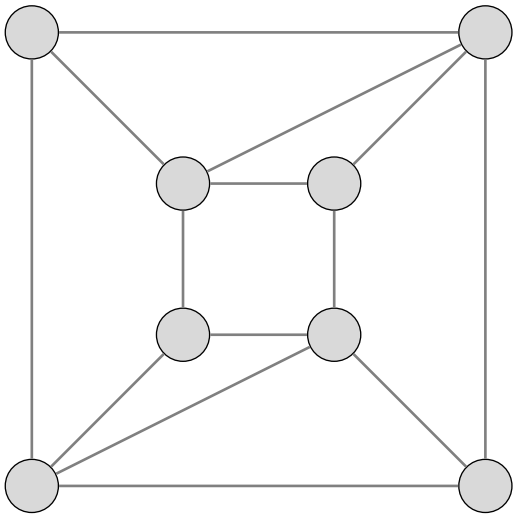






5 (2 points)**.** Verify the Euler's formula for the following graphs.

(a)



(b)