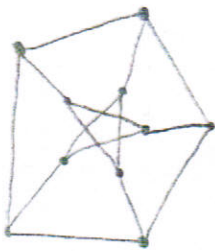
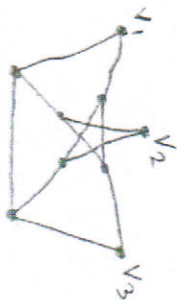


2.) 1.) The Peterson graph is not planar.

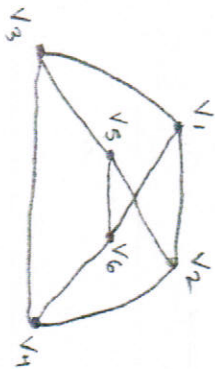
$G =$



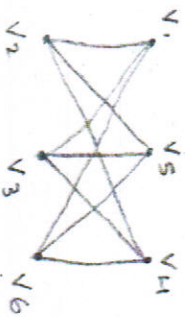
has
subgraph
 $G' =$



Smoothing out
vertices v_1, v_2, v_3
and relabelling,
we get



which can
be redrawn as :

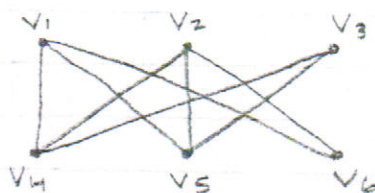


$= K_{3,3}$

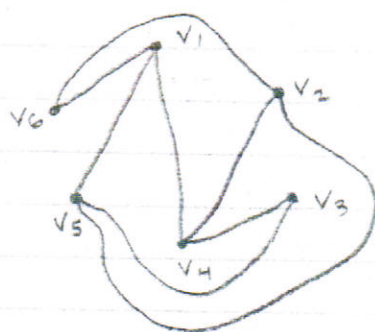
Thus, the Peterson graph contains a subgraph that is a subdivision of $K_{3,3}$
 $\Rightarrow$ it is not planar.

✓ ii.) $K_{3,3} - e$ is planar.

$K_{3,3} - e$:

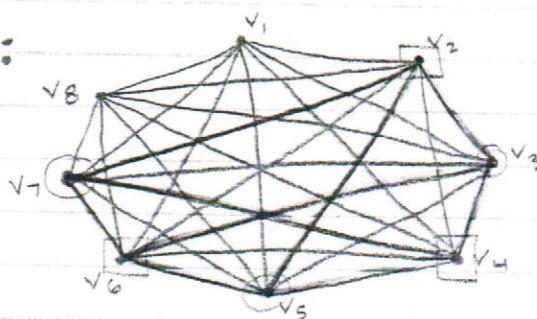


can be redrawn as :



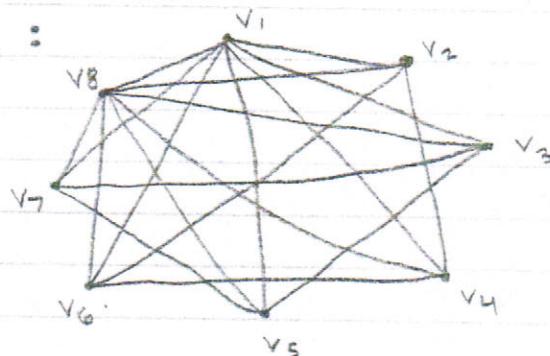
iii.) $K_8 - K_{3,3}$ is not planar.

K_8 with $K_{3,3}$ highlighted :

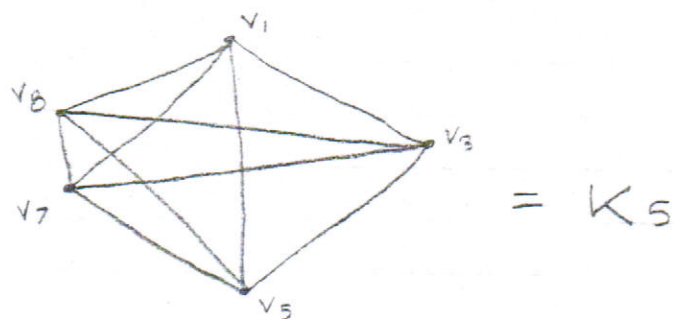


$$\begin{aligned} K_{3,3} &= U_1 \cup U_2 \\ U_1 &= \square \\ U_2 &= \bigcirc \end{aligned}$$

$K_8 - K_{3,3}$:



has subgraph:

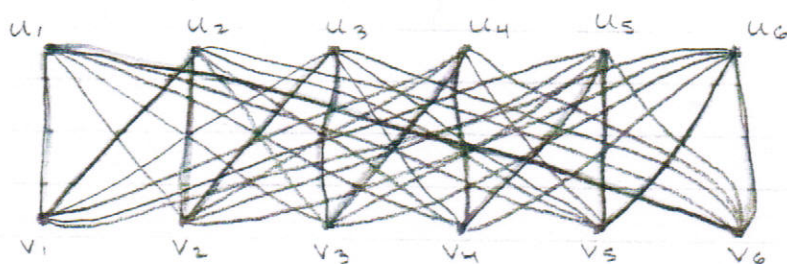


$\frac{2}{2}$

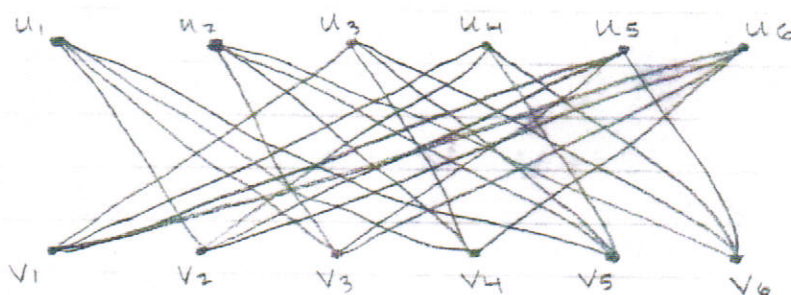
Thus, $K_8 - K_{3,3}$ contains K_5 as a subgraph
 $\Rightarrow K_8 - K_{3,3}$ is not planar.

iv.) $K_{6,6} - C_{12}$ is not planar.

$K_{6,6}$ with
 C_{12} highlighted :

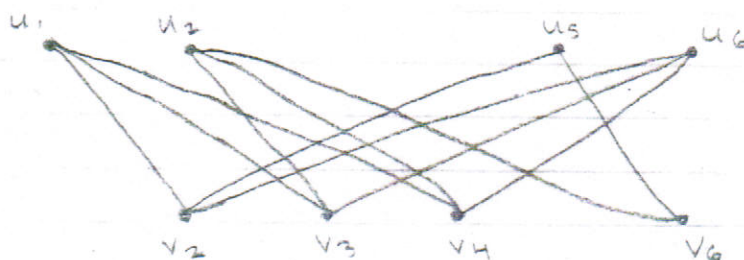


$K_{6,6} - C_{12}$:



$\frac{2}{2}$

has subgraph:



Smoothing out
 u_5 and v_6 we
 get

