4.1 There are 11 non-isomorphic simple graphs with 4 vertices. Draw all those with
(a) no edges;  (b) 1 edge;  (c) 2 edges;  (d) 3 edges;  (e) 4 edges  (f) 5 edges;
(g) 6 edges;  (h) more than 6 edges (if any).

4.2 In the graph $G$ of Figure 1 below find
(a) an open trail of length 7, which is not a path;
(b) an open path of length 11;
(c) cycles of length 6 and 10. (A cycle is a trail which is closed path of length at
least 1.)

Does the graph $G$ have any circuits, of positive length, which are not cycles? If not
why not?

![Figure 1: G](image)

4.3 Which of the following graphs are Eulerian, which are semi-Eulerian but not Eulerian
and which are not semi-Eulerian? Wheel graphs $W_1$, $W_2$ and $W_n$, where $n \geq 3$.
Complete graphs $K_5$, $K_{2n}$, $K_{2n+1}$, where $n \geq 1$. 