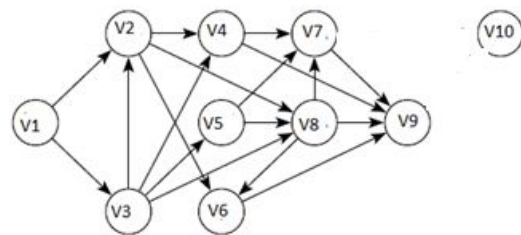


Exercise1

Let $G = (V, E)$ be a directed graph.

Answer the following questions:

- Determine V and E .
- Determine the order and the size of G
- Express formally the graph G
- Give two adjacent vertices, two independent vertices, two adjacent edges, and two independent edges.
- Calculate:
 $d^-(v1), d^+(v1), d^-(v10), d^+(v10), d(10),$
 $d(v8), d^+(v9), d^-(v9), I^+(v3), I^-(v8), I(v9),$
 $\Gamma^-(v1), \Gamma^-(v8), \Gamma^+(v3), \Gamma(v8), \Gamma^+(v9), \Gamma(v10)$



What do you observe?

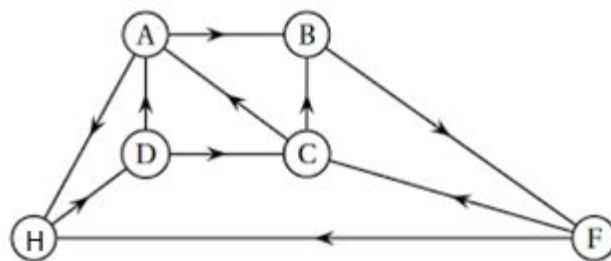
Exercise2

- 1-Proof that the number of vertices of an odd degree in a graph is always even.
- 2-check the proposition using the above graph.

Exercise3

We consider the following graph $G = (V, E)$

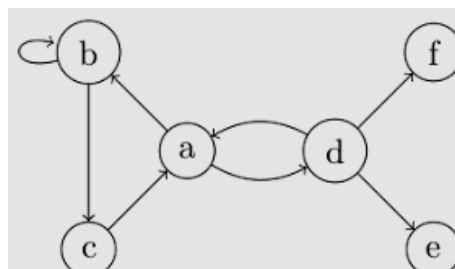
- Calculate $\delta(G), \Delta(G), d(G)$
- What is the type of G
- Based on the vertex degree, show that the graph G contains a cycle.
- Give a path, circuit, chain, cycle, simple path, elementary path, simple circuit, elementary circuit.



Exercise4

Observe the following graph

- What is the type of G ?
- Give a sub graph of G where its order=4
- Give partial graph of G where its size=7
- Give a partial sub graph of G where its order=4.
- Determine $G - a, G - (a, b)$



Exercise 5

We are interested in 3-regular graphs. Try to draw such graphs having 4, 5, 6, then 7 vertices. What do you conclude ?

Exercise 6

- Check the following graph , if it is an euleurian graph?
- Apply an algorithm to construct an eulerian cycle

