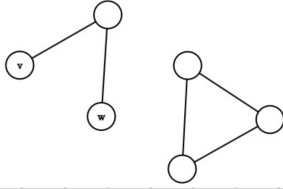


# Quiz 9

1)



True or false: In the graph above, the nodes labeled  $v$  and  $w$  are adjacent.

Select one:

True

False

2)

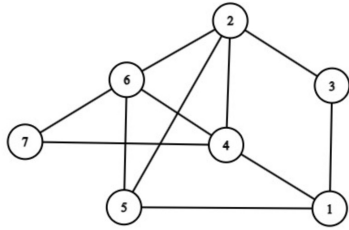
Let  $G = (V, E)$  be a graph with 4 vertices  $v_1, v_2, v_3, v_4$ . Suppose that

$$\deg(v_1) = 1, \deg(v_2) = 2, \deg(v_3) = 3, \deg(v_4) = 2.$$

How many edges does  $G$  have? (Your answer should consist of a single integer.)

Answer:

3)



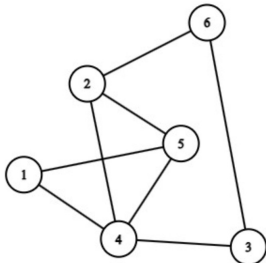
True or false: the graph above has a closed Eulerian walk (Eulerzyklus).

Select one:

True

False

4)



True or false: the graph above has a Hamiltonian path (Hamiltonpfad).

Select one:

True

False

5)

Let  $G = (V, E)$  and assume all vertices of  $G$  have even degree. Recall the algorithm walk from the lecture:

walk( $u$ ):

if there exists an edge  $\{u, v\}$  which is not marked:

mark the edge  $\{u, v\}$

walk( $v$ )

Let  $u \in V$  be a vertex of  $G$ . Which of the following statements must be true after executing walk( $u$ )?

(Below, an edge is called incident to  $u$  if it is of the form  $\{u, v\}$ , where  $v$  is another vertex in  $G$ )

Select one or more:

- a. The total number of marked edges in  $G$  is even.
- b. The total number of marked edges in  $G$  is odd.
- c. The total number of unmarked edges incident to  $u$  is even.
- d. The total number of unmarked edges incident to  $u$  is odd.

What is used?