

PART 1: GRAPH

a.
Graph G1 is an Euler circuit

Graph G2 is not Euler because vertices: ['a', 'b', 'c', 'd'] has odd degree.

Graph G3 is an Euler path

b.
Graph Test1 is an Euler circuit

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PART 2: GRAPH

Using Dirac's theorem

a.
Graph G1 is not Hamiltonian

Graph G2 is not Hamiltonian

Graph G3 is not Hamiltonian

b.
Graph Test2 is not Hamiltonian

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PART 3: GRAPH

Using Ore's theorem

a.
Graph G1 is Hamiltonian

Graph G2 is not Hamiltonian

Graph G3 is not Hamiltonian

b.
Graph Test2 is not Hamiltonian