Ömercan GÖKTAŞ
150119671

① a) undirected edges,
not multiple edges.
no loop.

b) undirected edges
it has multiple edges.
no loop.

c) undirected edges
it has multiple edges
it has loops.

d) directed edges
it has multiple edge.
it has loops

e) directed edges
it has multiple edges
it has loops.

f) undirected edges.
it has multiple edges.
no loop.

④ Since $a_{12} = a_{21} = 1$, there is 1 edge between a and b.

" $a_{13} = a_{31} = 1$, there are 3 edges " a and c.

" $a_{15} = a_{51} = 4$, there are 4 " " a and e.

" $a_{22} = 2$, there are 2 loops at b.

" $a_{23} = a_{32} = 1$, there is 1 edge btween b and c.

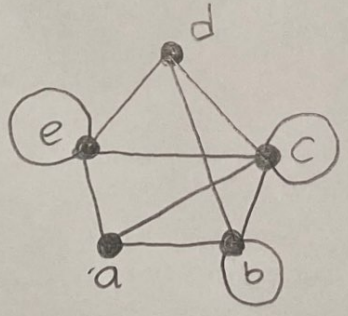
" $a_{24} = a_{42} = 3$, there are 3 edges between b and d.

" $a_{33} = 1$, there is 1 loop at c.

" $a_{35} = a_{53} = 1$, there is 1 edge between c and e.

" $a_{45} = a_{54} = 2$, there are 2 edges between d and e.

" $a_{55} = 3$, there are 3 loops at e.



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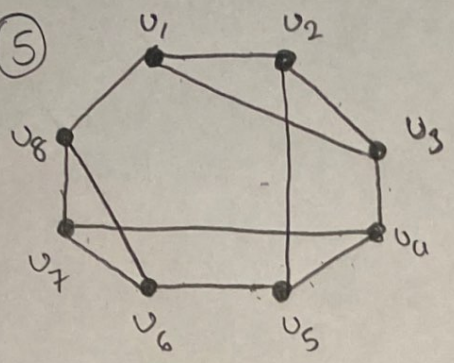
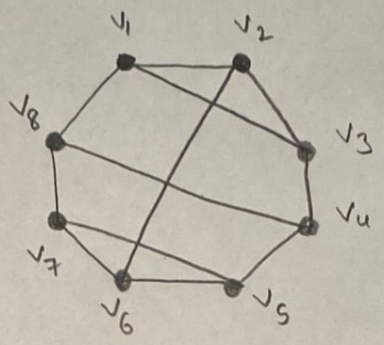
(5)





8 vertecies
12 edges

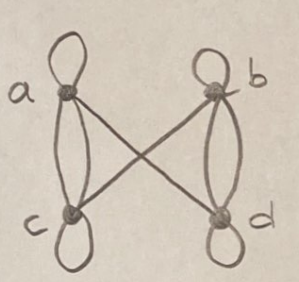
$\delta(v_1)=3$ $\delta(v_2)=3$
$\delta(v_3)=3$ $\delta(v_4)=3$
$\delta(v_5)=3$ $\delta(v_6)=3$
$\delta(v_7)=3$ $\delta(v_8)=3$

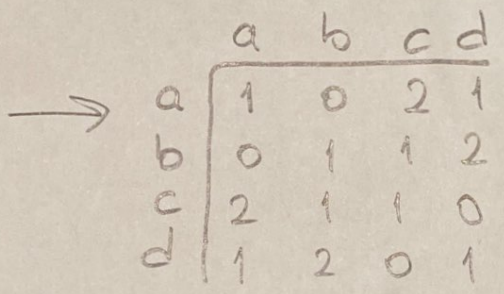
8 vertecies
12 edges

$\delta(v_1)=3$ $\delta(v_2)=3$
$\delta(v_3)=3$ $\delta(v_4)=3$
$\delta(v_5)=3$ $\delta(v_6)=3$
$\delta(v_7)=3$ $\delta(v_8)=3$

Yes, they are isomorphic.

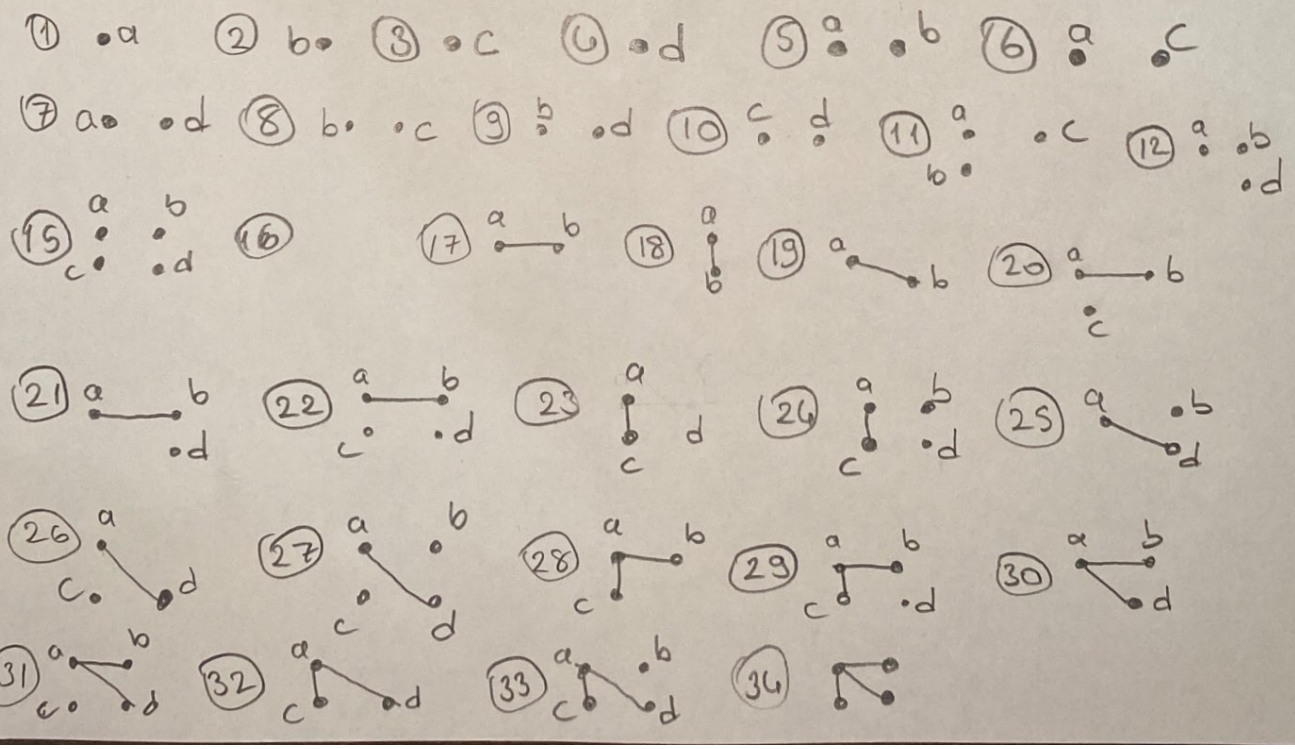
(3)





	a	b	c	d
a	1	0	2	1
b	0	1	1	2
c	2	1	1	0
d	1	2	0	1

(2)



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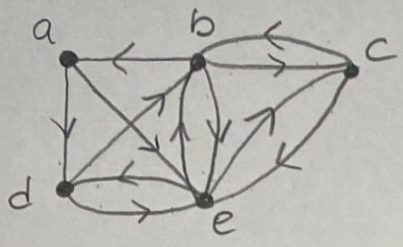
⑥



δ = degree

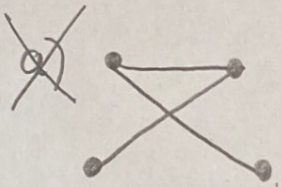
$\delta(a) = 3 \quad \delta(b) = 6 \quad \delta(c) = 4$

$\delta(d) = 4 \quad \delta(e) = 7$

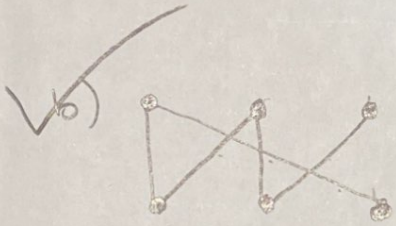
→ There is no Eulerian circuit because all of the verteaies' degree are not even. (a, e).

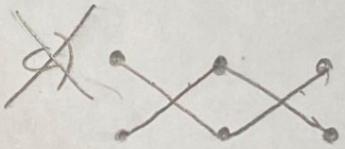
a-d-b-a-e-d-e-b-c-b-e-c-e.

⑦

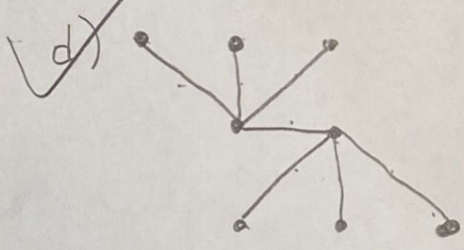


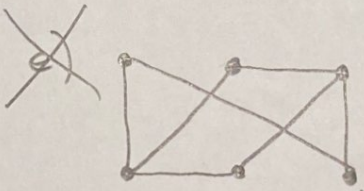
there is cycle.



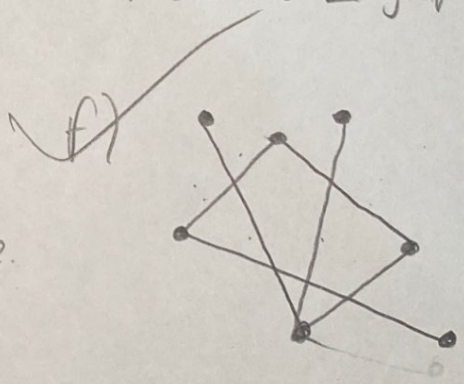


there is 2 graphs.





there is cycle.



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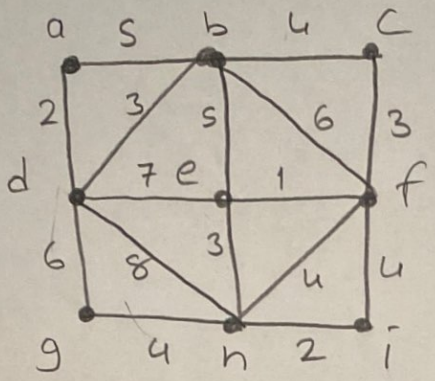
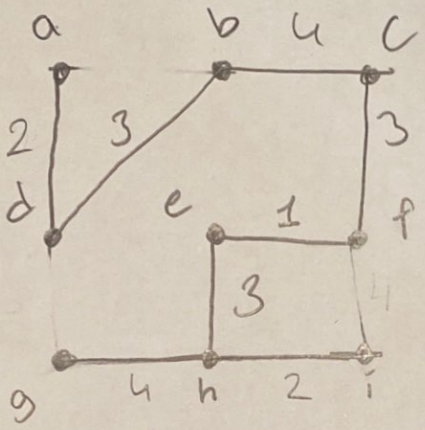
(8)



→



Total weight: 22