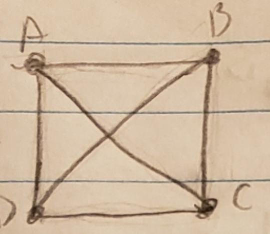
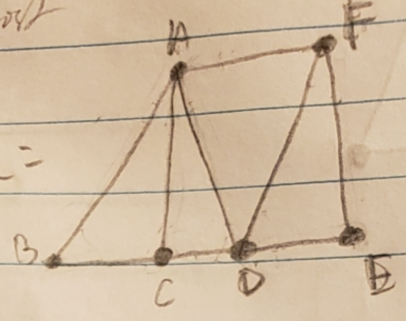
HW 17 ok to post

1) $G_1 =$



$G_2 =$

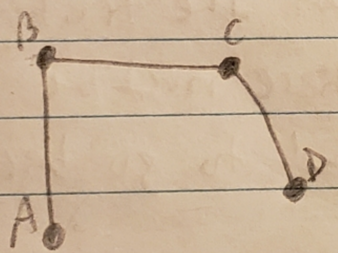


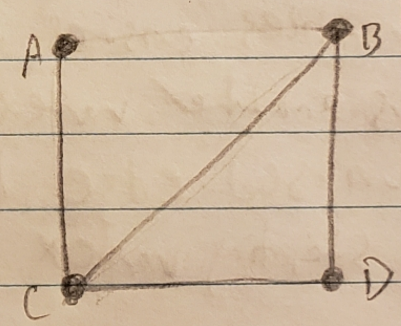
$$\begin{array}{c|cccc} & A & B & C & D \\ \hline A & 0 & 1 & 1 & 1 \\ B & 1 & 0 & 1 & 1 \\ C & 1 & 1 & 0 & 1 \\ D & 1 & 1 & 1 & 0 \end{array}$$

$$\begin{array}{c|cccccc} & A & B & C & D & E & F \\ \hline A & 0 & 1 & 1 & 1 & 0 & 1 \\ B & 1 & 0 & 1 & 0 & 0 & 0 \\ C & 1 & 1 & 0 & 1 & 0 & 0 \\ D & 1 & 0 & 1 & 0 & 1 & 1 \\ E & & & & & 0 & \\ F & & & & & & 0 \end{array}$$

Have neither
because G_1 has all odd degree. And G_2 has Odd degree vertices

2) $G_1 =$



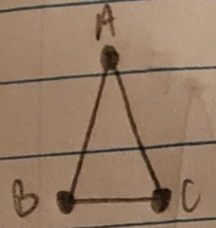


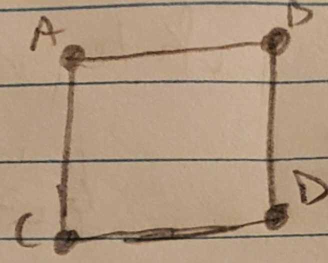
$$\begin{array}{c|cccc} & A & B & C & D \\ \hline A & 0 & 1 & 0 & 0 \\ B & 1 & 0 & 1 & 0 \\ C & 0 & 1 & 0 & 1 \\ D & 0 & 0 & 1 & 0 \end{array}$$

$$\begin{array}{c|cccc} & A & B & C & D \\ \hline A & 0 & 0 & 1 & 0 \\ B & 0 & 0 & 1 & 1 \\ C & 1 & 1 & 0 & 1 \\ D & 0 & 1 & 1 & 0 \end{array}$$

Only has Eulerien path as the start and end vertices are different.

3)





	A	B	C
A	0	1	1
B	1	0	1
C	1	1	0

	A	B	C	D
A	0	1	1	0
B	1	0	0	1
C	1	0	0	1
D	0	1	1	0

They are Eulerian cycles because they start & end on the same vertex.

4) For a Eulerian cycle, the even degree of all vertices ensures that, when the trail enters another vertex 'w', there must be an unused edge leaving 'w' to go back to the starting vertex.

5) For a E. path, we start with an odd degree vertex, we then choose the next edge, we keep moving until we get to the edge, if the last edge is the edge with connects to the starting vertex, then we have a E. cycle as we will end where we start. Therefore, we must have an other vertices with at least degree 1, to ensure we end at another vertice then where we started.