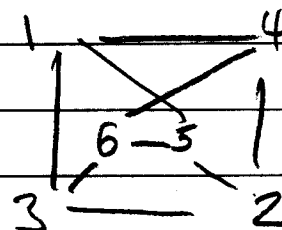
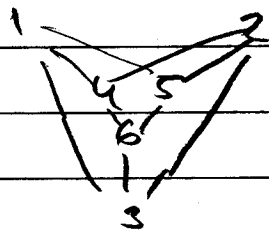


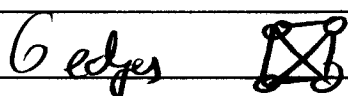
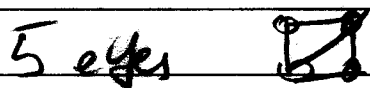
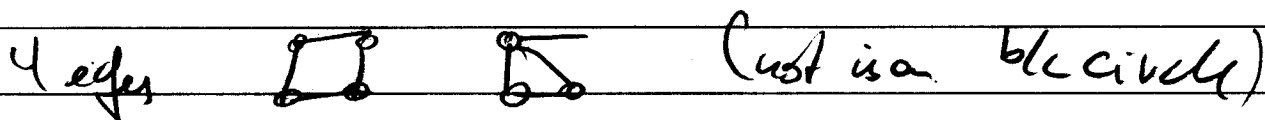
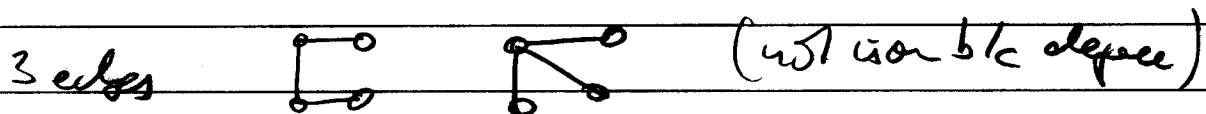
28]

In graph A, two adjacent vertices may have a common neighbour, In graph B they do not. Thus the graphs are not isomorphic. Bad Case isomorphic



29]

Need ≥ 3 edges to be connected.



31]

Suppose the graph is not connected.

Two components with m , respectively $n-m$ vertices. They have at least

$$\binom{m}{2} + \binom{n-m}{2} = \frac{m(m-1)}{2} + \frac{(n-m)(n-m-1)}{2}$$

$$= \frac{n^2 - 2nm + 2m^2 - n}{2} \quad \text{We add } \frac{2(m-1)(n-m-1)}{2}$$

and get:

$$\begin{aligned} &\leq \frac{n^2 - 2nm + 2m^2 - n + 2(n-1)(n-m-1)}{2} \\ &= \frac{n^2 - 3n + 2}{2} = \frac{(n-1)(n-2)}{2} = \binom{n-1}{2} \end{aligned}$$

This dry and split would use at most $\binom{n-1}{2}$ edges, so is not possible if there are more than $\binom{n-1}{2}$ edges.