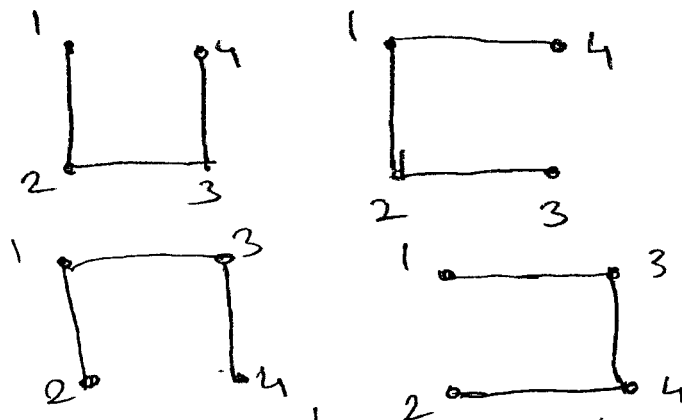
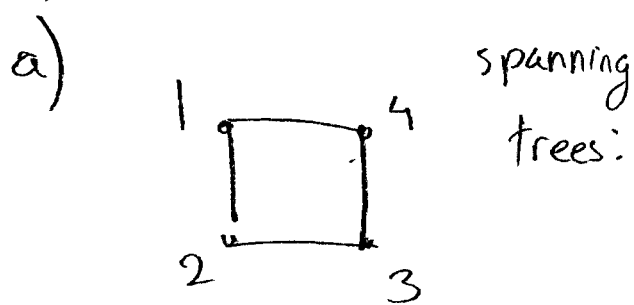


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Quiz #5



b) C_n has exactly n spanning trees. The removal of any single edge creates a spanning tree. There are n edges.

2) Pf: Tree has at least 2 end-points. Suppose not!

This tree has exactly 1 endpoint, let's say v_1 .

$\deg(v_1) = 1$ and $\deg(\text{verts}) \geq 2$. By handshaking lemma,

$$\sum_{i=1}^n \deg(v_i) = 2(n-1) = 2n-2 \text{ but removing that}$$

endpoint gives $\sum_{i=2}^n \deg(v_i) = 2n-3$

However, as all vertices have $\deg \geq 2$, $\sum_{i=2}^n \deg(v_i) \geq 2(n-1) = 2n-2$

as there are $n-1$ vertices with $\deg \geq 2$.

Clearly a contradiction as $\boxed{2n-3 \neq 2n-2}$