Math 6014 - Practice Problems 3

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1.

2. Let G be a 3-connected plane graph and let $x \in V(G)$. Show that the vertices and edges of G cofacial with x form a 'generalized' wheel.
   G 3-connected implies G 2-connected, which implies that every face of G is bounded by a cycle. Now, consider the number of faces whose boundary contains x. It cannot by 2 since then there would be a cut set of size 2 (WHY) I need to think about this, basically I thought at first it means that x is just contained in some cycle which is the whole graph but now I see it could be something like

3.