WP6 - Solution

Sunday, March 15, 2026 3:08 PM

① Note: in class we proved the stronger statement:

$\forall e, f \in E(G): \exists C$ with $e, f \in E(C)$

$\Rightarrow \forall e \in E(G): \exists C$ with $e \in E(C)$ ✓

② G minimally 2-connected

$\Rightarrow$ every cycle subgraph is an induced cycle

equivalent $\Rightarrow$ no cycle has a chord

Contrapositive

G has a chorded cycle $\Rightarrow$ G is not minimally 2-connected

Recall: 2-connected $\Rightarrow$ 2-idps $\forall u, v \in V(G)$

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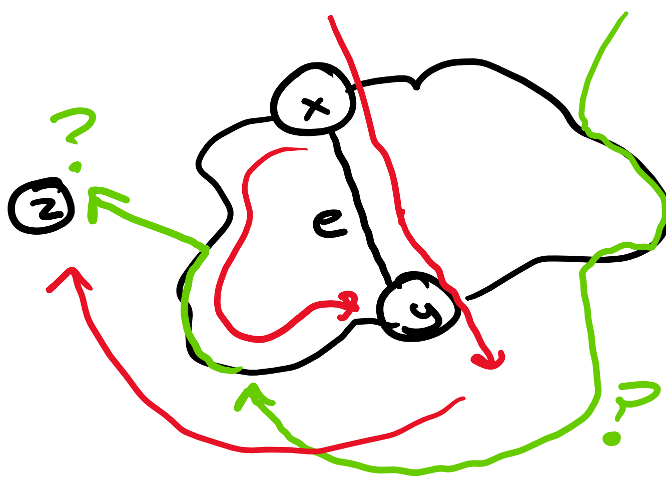
(per whitney)

Does any idp need to use $e = (x, y)$ where e is a chord?

Note: idps are vertex-disjoint

$\rightarrow$ if any idp uses (x, y) it can equivalenty use a path along e's chored cycle instead



Note: some other idp cannot minimally use edges on both sides of the cycle, as this would imply a sepate set of idps (recall proofs from last class)

$\Rightarrow$ $G - e$ is still 2 connected, so it is not minimally 2-connect with a chord $\square$