Vertex cover in cubic graphs with large girth

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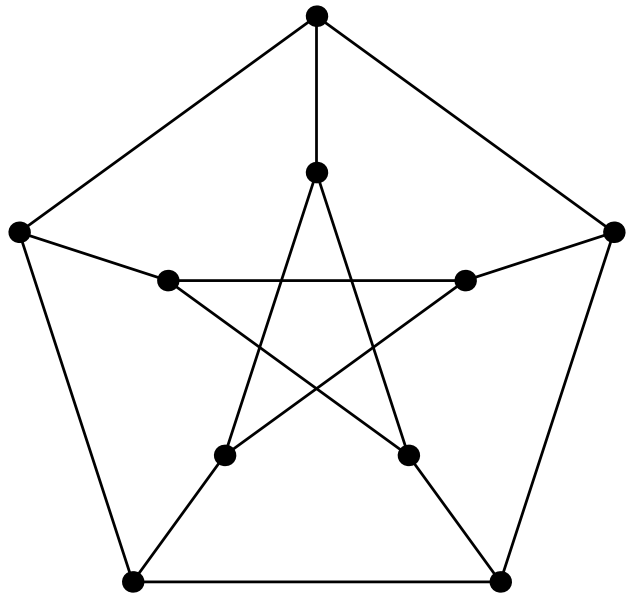
Definitions

Vertex cover in cubic graphs with large girth

- $G = (V, E)$
- Every vertex has degree 3
- The length of the smallest cycle (girth of G) is large
- $C \subset V$ s.t. every edge has at least one endpoint in C



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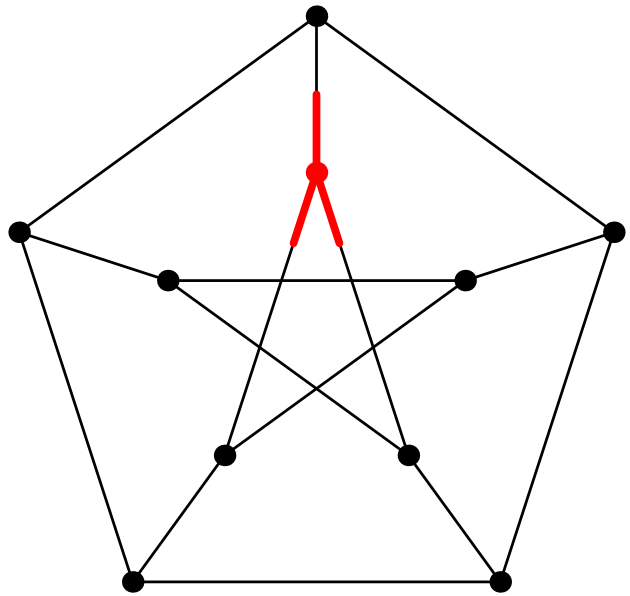

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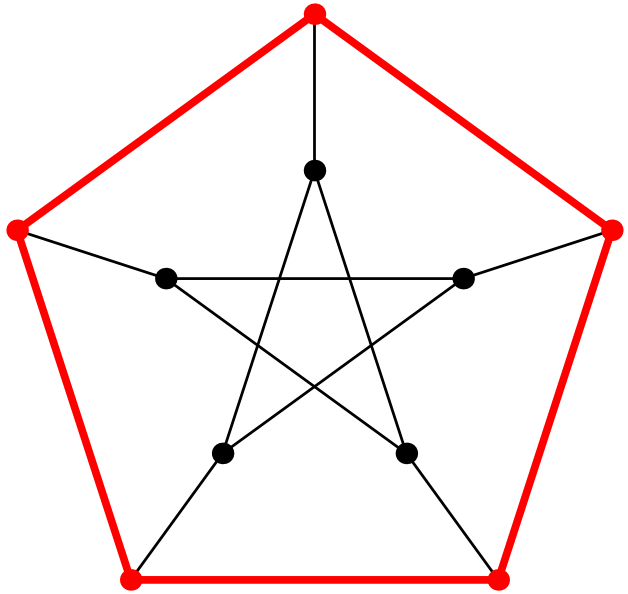

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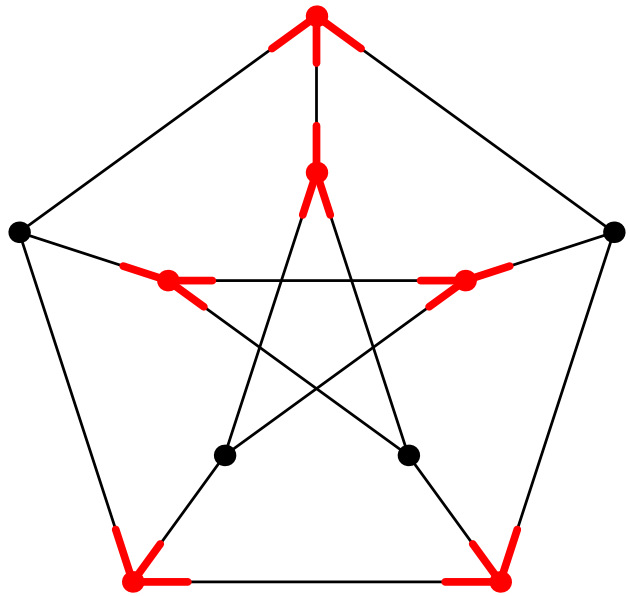

Our problem

Try to find some upper bound for size of minimum vertex cover

Known bounds

$$\frac{1}{2}|V| \leq |C| \leq \frac{5}{8}|V|$$

Motivation

We are aware of a method to improve upper bound for dominating number. Can we use similar argument for other graph parameters?

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