

Enumeration of Simple Complete Topological Graphs

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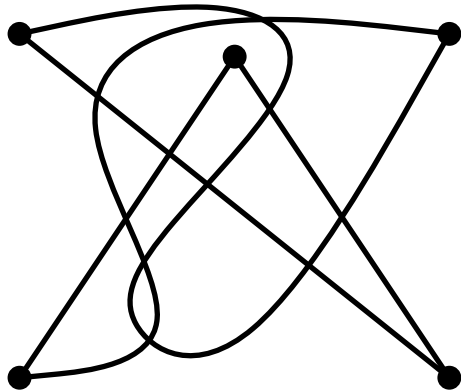
- edges do not pass through any vertices other than their end-points
- any two edges have only finitely many common points
- any intersection point of two edges is either a common end-point or a **crossing** (no touching allowed)
- at most two edges can intersect in one crossing

simple: any two edges have at most one common point

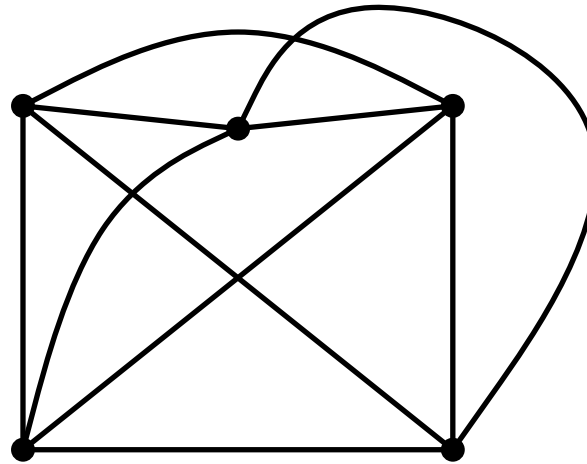
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simple complete topological graph

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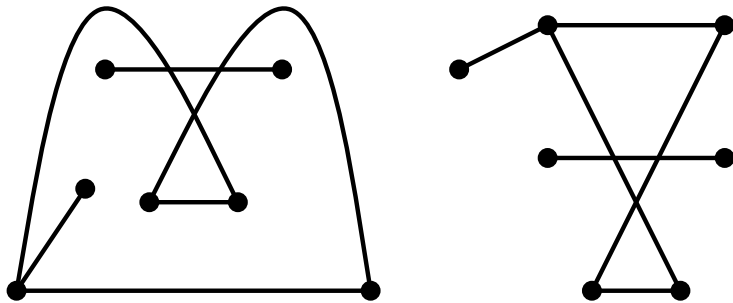
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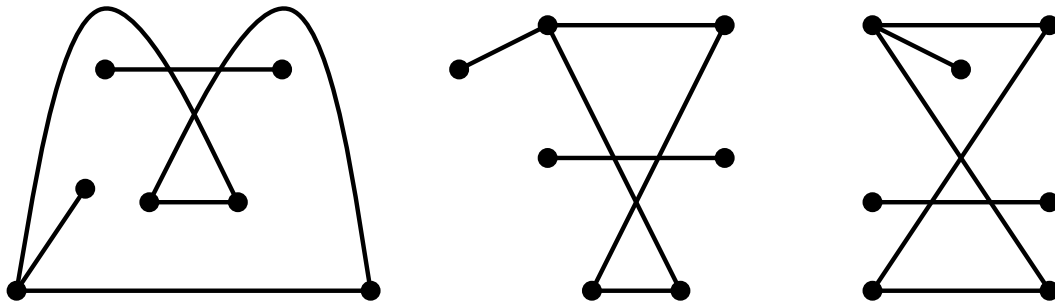
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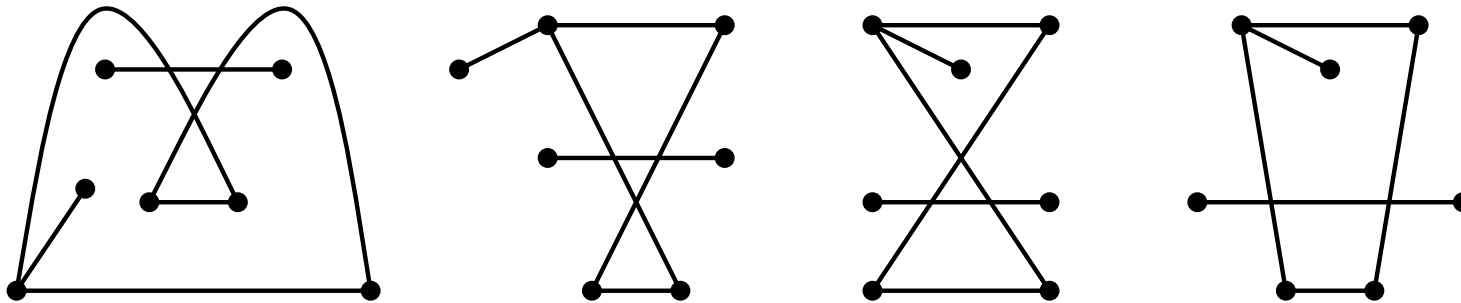
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Remark: The number of weak isomorphism classes of complete **geometric** graphs on n vertices is $2^{O(n \log n)}$

Graphs with maximum number of crossings

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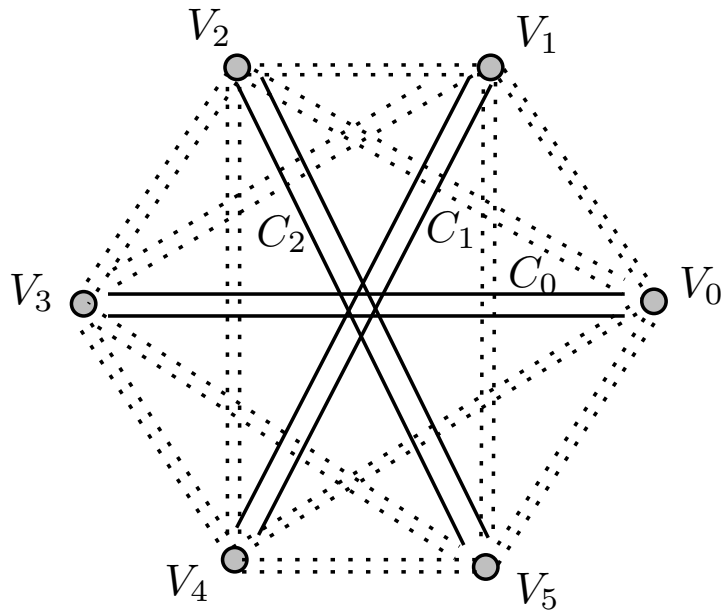
$$T_w^{\max}(n) \geq 2^{n(\log n - O(1))}$$

Proof of Theorem 1

Lower bound: $T(n) \geq 2^{\Omega(n^4)}$

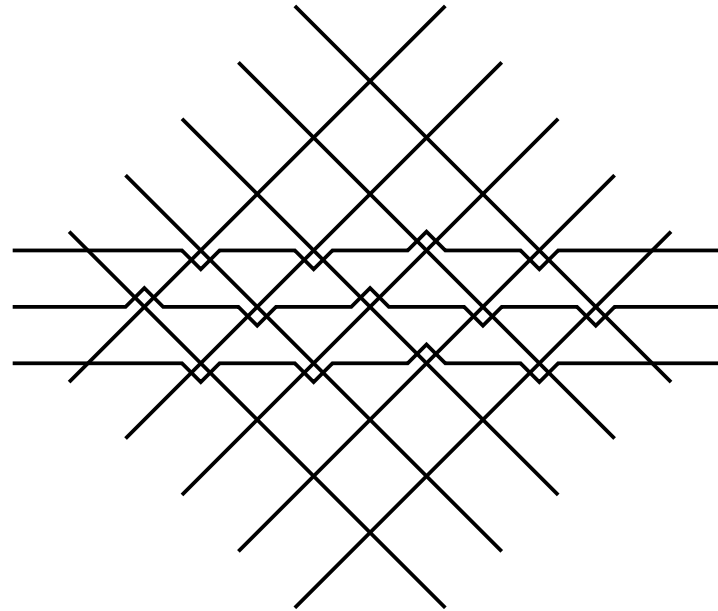
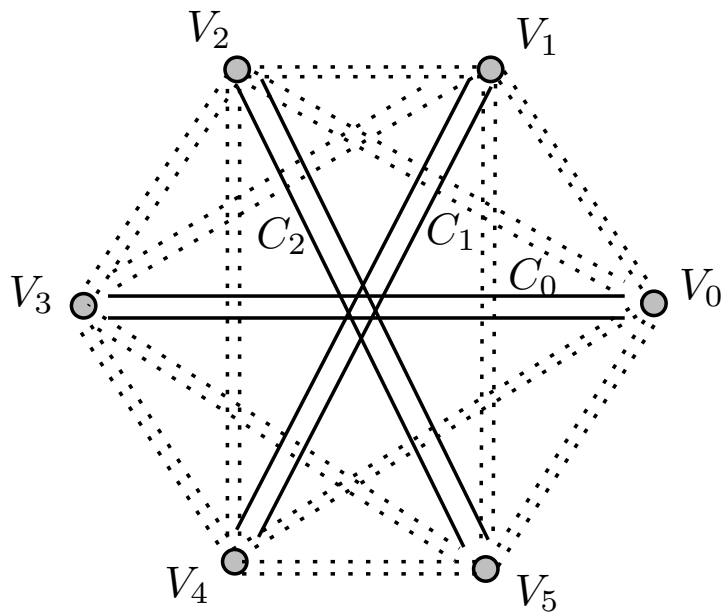
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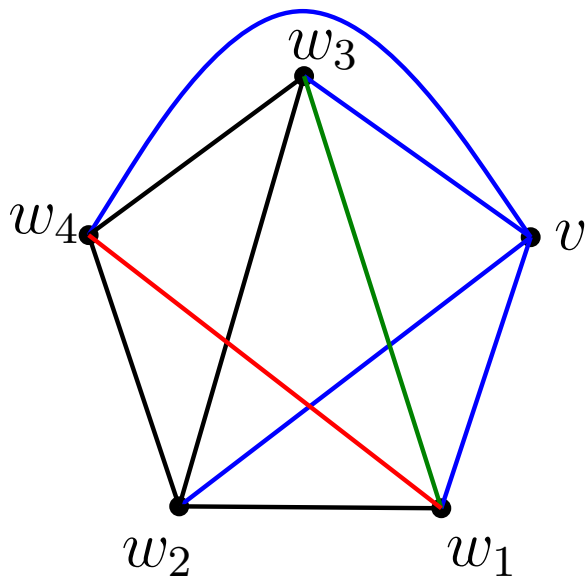
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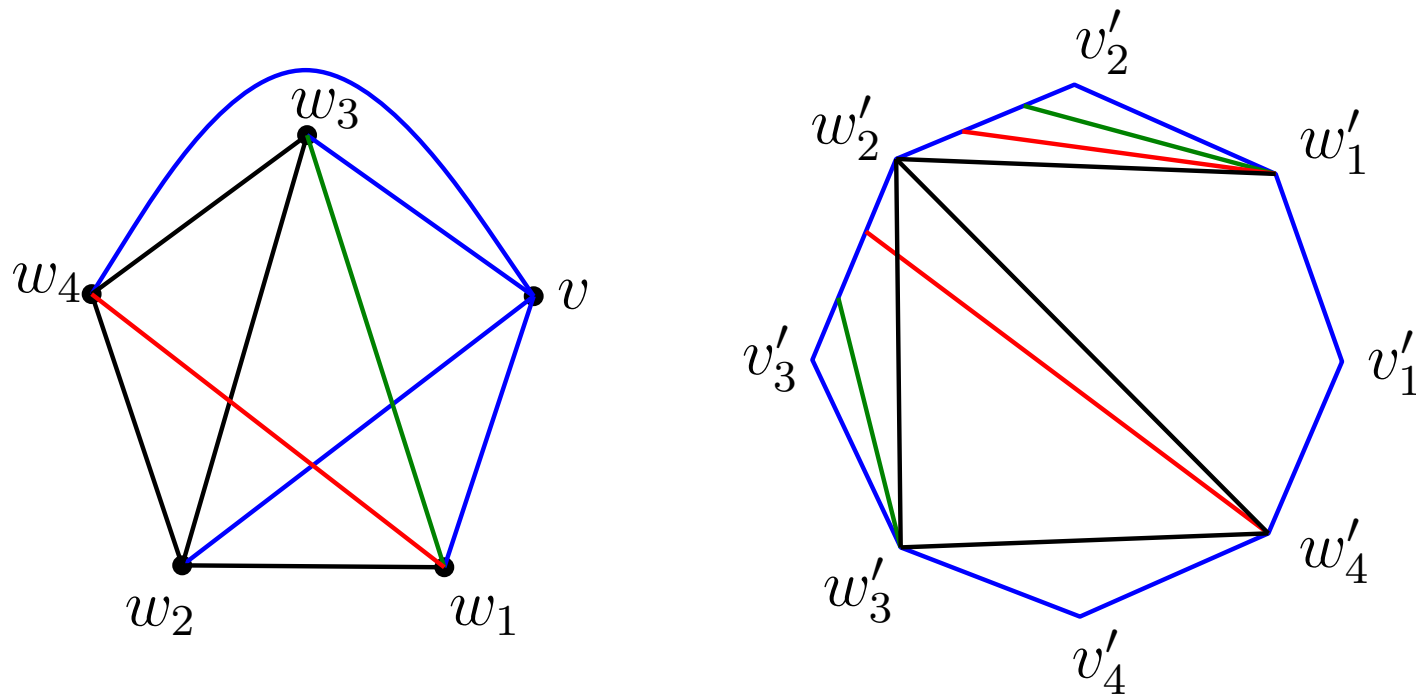
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