Tarski–Kuratowski algorithm

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In computability theory and mathematical logic the **Tarski–Kuratowski algorithm** is a non-deterministic algorithm which provides an upper bound for the complexity of formulas in the arithmetical hierarchy and analytical hierarchy.

The algorithm is named after Alfred Tarski and Kazimierz Kuratowski.

Algorithm   [edit]

The Tarski–Kuratowski algorithm for the arithmetical hierarchy:

1. Convert the formula to prenex normal form.
2. If the formula is quantifier-free, it is in Σ^0_0 and Π^0_0.
3. Otherwise, count the number of alternations of quantifiers; call this k.
4. If the first quantifier is $\exists$, the formula is in Σ^0_{k+1}.
5. If the first quantifier is $\forall$, the formula is in Π^0_{k+1}.

References   [edit]

- Rogers, H. *The Theory of Recursive Functions and Effective Computability*, MIT Press. ISBN 0-262-68052-1; ISBN 0-07-053522-1

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