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Π_1^0 classes in mathematics. (English) [Zbl 0941.03044](#)

Ershov, Yu. L. (ed.) et al., Handbook of recursive mathematics. Vol. 2: Recursive algebra, analysis and combinatorics. Amsterdam: Elsevier. Stud. Logic Found. Math. 139, 623-821 (1998).

A survey (including some new results) of the occurrences and uses of Π_1^0 classes in areas such as logic, nonmonotonic logic, algebra, analysis, and combinatorics. More specifically, a typical result here represents Π_1^0 classes by solutions to problems in one of these areas of application. E.g., given a recursive graph, its set of k -colorings forms a recursively bounded Π_1^0 class. The representation result, loosely stated, is that every recursively bounded Π_1^0 class arises in this manner. Such a representation then allows the general machinery of Π_1^0 classes to be brought to bear on, in this case, recursive graph theory. Polynomial-time versions of these ideas are also treated.

For the entire collection see [\[Zbl 0905.03002\]](#).

Reviewer: [Leon Harkleroad \(Poughkeepsie\)](#)

MSC:

- 03D45 Theory of numerations, effectively presented structures
- 03-02 Research exposition (monographs, survey articles) pertaining to mathematical logic and foundations
- 03D15 Complexity of computation (including implicit computational complexity)
- 03D30 Other degrees and reducibilities in computability and recursion theory
- 03D35 Undecidability and degrees of sets of sentences

Cited in **33** Documents

Keywords:

Π_1^0 classes; recursive algebra; recursive combinatorics; recursive graphs; survey; nonmonotonic logic