introductory Combinatorics - The Inclusion-Exclusion Principle

Diego ROJAS

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1 The Inclusion-Exclusion Principle

Theorem: The number of objects of the set S that have none of the properties $P_1, P_2, \ldots, P_m$ is given by the alternating expression

$$A_i = \{x : x \in S\}, (i = 1, 2, \ldots, m) \tag{1}$$