

Also available at <http://amc-journal.eu>
ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)
Ars Mathematica Contemporanea Volume 3, Issue 1, Year 2010, Pages 1-12

A note on enumeration on one-vertex maps

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Abstract

Explicit formula for the numbers of distinct maps and pre-maps having a single vertex of valence d are given. The question of what precisely is meant by a map can be answered in several different ways. We enumerate 16 different types of objects where each type is obtained by selecting whether the object is a pre-map or a map, is oriented or general, whether the underlying graph or pre-graph is signed or unsigned, is directed or undirected.

Keywords: Oriented maps and pre-maps, orientable maps and pre-maps, non-orientable maps and pre-maps, pre-graphs, matchings in complete graphs, Cauchy-Frobenius-Burnside lemma.

Math. Subj. Class.: 05C10, 05C30

Math Sci Net: [05C30 \(05C10\)](#)

Opomba o enumeraciji enovozliščnih zemljevidov

Povzetek

Podana je eksplicitna formula za števila različnih zemljevidov in pred-zemljevidov z enim samim vozliščem, ki ima stopnjo d . Odgovorov na vprašanje, kaj natanko pomeni zemljevid, je veliko. Naštejemo 16 različnih tipov objektov, določenih z naslednjimi izbirami: ali je objekt pred-zemljevid ali zemljevid, ali je orientiran ali splošen, ali je njegov osnovni graf ali pred-graf predznačen ali nepredznačen, usmerjen ali neusmerjen.

Ključne besede: Orientirani zemljevidi in pred-zemljevidi, ne-orientabilni zemljevidi in pred-zemljevidi, pred-grafi, parjenja v polnih grafih, Cauchy-Frobenius-Burnside-ova lema.