

Dear Prof. Sloane:

Get the ref!

(P1) → 7401

Here are the graph- and map-enumeration tables I promised you.

GRAPH ENUMERATION TABLES

- 2-REGULAR AND CONNECTED 2-REGULAR DIGRAPHS, REPRINT # 0, P 477

- LABELLED THREE-CONNECTED GRAPHS

BY NUMBER OF VERTICES AND EDGES, REPRINT # 1, PP 6-7

BY NUMBER OF VERTICES ALONE, REPRINT # 1, P 8, TABLE 3

- LABELLED HOMEOMORPHICALLY IRREDUCIBLE TWO-CONNECTED GRAPHS

BY NUMBER OF VERTICES AND EDGES, REPRINT # 1, PP 6-7

BY NUMBER OF VERTICES ALONE, REPRINT # 1, P 8, TABLE 2

(THE LABELLED TWO-CONNECTED GRAPHS WERE COUNTED IN REFERENCE (0) OF THIS REPRINT)

UNLABELLED GRAPHS:

2-CONNECTED

2-CONNECTED HOMEOMORPHICALLY IRREDUCIBLE

3-CONNECTED

PREPRINT # 1

DIVIDED INTO 3 PARTS.

THE LAST PAGE OF EACH PART GIVES A TABLE BY NUMBER OF VERTICES ALONE.

REFERENCES

REFERENCES FOR 2-CONNECTED GRAPHS:

- R. W. ROBINSON, ENUMERATION OF NON-SEPARABLE GRAPHS, J. COMBIN. THEORY SER. B 9 (1970), 327-356.

- R. W. ROBINSON AND T. R. WALSH, INVERSION OF CYCLE INDEX SUM RELATIONS FOR 2- AND 3-CONNECTED GRAPHS, J. COMBIN. THEORY SER. B, TO APPEAR.

REFERENCES FOR THE OTHER TWO

CLASSES OF GRAPHS:

- REPRINT # 2.

- ROBINSON AND WALSH, IBID.

I also prepared tables of members of series-parallel graphs (graphs without a homeomorph of K_4) but I think you have these.

MAP ENUMERATION TABLES

(P?)

ROOTED MAPS

- ALL ROOTED MAPS BY NUMBER OF EDGES, NUMBER OF VERTICES AND GENUS, REPRINT #3, PP 215-216.
THE ENCLOSED EXTENSION OF THE TABLES WERE TAKEN FROM REFERENCE 10 OF THIS TABLE. THE PLANAR CASE WAS SOLVED IN REFERENCE 9b (BY EDGES ALONE) AND 9c (EDGES AND VERTICES).

- NON-SEPARABLE (2-CONNECTED) ROOTED MAPS.

THE PLANAR CASE: BY EDGES ALONE, REFERENCE 9b

BY EDGES AND VERTICES, REFERENCE 4 OF REPRINT #4.

THE TOROIDAL CASE (GENUS 1): REPRINT #4, P 241, TABLE 2.

-ROOTED THREE-CONNECTED PLANAR MAPS

- BY EDGES ALONE, REFERENCE 9b OF REPRINT #3

- BY EDGES AND VERTICES:

R. C. MULLIN AND P. J. SCHELLENBERG, "THE ENUMERATION OF C-NETS VIA QUADRANGULATIONS", J. COMBIN. THEORY, V. 4, 1968, PP 259-276.

cf 1507

UNROOTED MAPS

FOR THE PLANAR CASE
- SEE PREPRINT #2, UNPUBLISHED TABLES PREPARED BY N. C. WORMALD.

SENSED MEANS COUNTED UP TO ORIENTATION-PRESERVING HOMEOMORPHISM

UNSENSED MEANS COUNTED UP TO ALL HOMEOMORPHISMS INCLUDING REFLECTION.

PLN

od all 5 6/91

P3

REFERENCES

● ALL MAPS, SENSED (# EDGES ALONE)

V. A. LISKOVETS, ENUMERATION OF NON-ISOMORPHIC PLANAR MAPS, SEL. MATH. SOV. VOL 4, NO. 4 (1985) 303-323

ALL MAPS, SENSED AND UNSENSED.

- N. C. WORMALD, ON THE NUMBER OF PLANAR MAPS, CANADIAN JOURNAL OF MATHEMATICS 37 (1981) 1-11

- N. C. WORMALD, COUNTING UNROOTED PLANAR MAPS, DISCRETE MATHEMATICS 36 (1981) 205-255.

TWO-CONNECTED MAPS, SENSED (# EDGES ALONE)

● V. A. LISKOVETS AND T. R. WALSH, THE ENUMERATION OF NON-ISOMORPHIC 2-CONNECTED PLANAR MAPS, CANADIAN JOURNAL OF MATHEMATICS, VOL. XXXV, NO. 3, 1983, 417-435.

(WORMALD NEVER PUBLISHED HIS DERIVATION OF THE UNSENSED CASE)

THREE-CONNECTED MAPS, SENSED (# EDGES ALONE)

PREPRINT #5 (FROM WHICH WORMALD TOOK HIS TABLES)

UNSENSED (# EDGES ALONE) - WE HAVE ONLY WORMALD'S TABLES.

UNSENSED (# EDGES AND # VERTICES):

A. J. W. DUIJVESTIJN AND P. J. FEDERICO

THE NUMBER OF POLYHEDRAL (3-CONNECTED PLANAR) GRAPHS.

MATHEMATICS OF COMPUTATION, VOL 37, NO 156 (1981) 523-532

FOR SENSED AND UNSENSED MAPS BY NUMBER
 OF VERTICES, NUMBER OF EDGES AND GENUS,
 SEE REPRINT #6, P169. FOR SENSED AND
 UNSENSED PLANAR MAPS WITH VARIOUS OTHER
 PROPERTIES SEE REPRINT #6, P174
 (THE PROPERTIES ARE GIVEN ON P173, TABLE 3)

I hope you find at least some of these tables
 useful. As whenever I find or produce more tables,
 I'll pass them on to you.

Yours sincerely,
 Timothy R. Walsh

→ 7401
(Aug. 15, 1991)!

Dear Neil,
I thought
answering it.

Believe it or not, I just got your letter today
this would be the quickest way of
cheers,
Jim



AT&T Bell Laboratories

600 Mountain Avenue
Murray Hill, NJ 07974-2070
908-582-3000

N. C. WORMALD, COUNTING UNROOTED
PLANAR MAPS, DISCRETE MATHEMATICS

July 9, 1991

36 (1981) 205-255, contains A6442 up to 10 edges.

The other tables were never, to my knowledge, published. If Wormald's
address is DEPT OF MATHEMATICS AND STATISTICS, UNIVERSITY OF AUCKLAND,
Professor T.R.S. Walsh PRIVATE BAG, AUCKLAND, NEW ZEALAND.
Department of Computer Science
University of Western Ontario
London, Ontario N6A 5B9
CANADA

Dear Timothy: My PhD supervisor compared me to Sesame Street's
Count: one wonderful three-connected map with 8 edges,
two terrific 3-connected maps with 0 edges, three thrilling 3-connected
maps with 10 edges, four fabulous 3-connected maps with 11 edges, fifteen!?

Many thanks indeed for the package of reprints and preprints. You have
certainly enumerated an impressive number of kinds of maps! Congratulations!

I was able to extract a good many sequences for the second edition of the
Sequence book. This was very helpful.

Is there a published reference for the sequence A6442=[2,4,14,52,...], of
connected unrooted planar maps with 1,2,3,... edges? Or the sequence A6443=
[2,4,14,47,...], of connected planar maps with a sense-reversing automorphism?

Or again for A6444=[0,1,2,3,6,14,30,...], 2-connected ditto? A similar
question for A6445=[0,0,0,0,1,...], 3-connected ditto?

In reprint #4, "Counting Rooted Maps III", JCT 18, 1975, there may be a
typographical error in Table VI-c on p.250. The table should be symmetrical, yet the
(4,8) and (8,4) entries are different - 36973989 vs 36873989. Which is correct? (This
affects one of the sequences I abstracted from that table.)

The numbers below the line
f=5 were copied assuming symmetry.
Apparently I made a booboo. Thanks for
Best regards, pointing it out to me.

Thank you again for the tables!

Neil Sloane

N. J. A. Sloane
Email: njas@research.att.com

P.S. Please let me know when the second
edition is out - I'd like to get one ASAP.
Maybe you could send me one and bill me? It usually
takes some time for things to hit the Canadian market.

These
as my
identification
numbers!
(I should have
omitted them
perhaps)