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HATCHER'S ALGEBRAIC
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REID MONROE HARRIS

Van Kampen's

Theorem Problem 1.

Suppose G and H are
nontrivial groups.

Suppose $x = g_1 h_1 \cdots g_n h_n$
lies in the center
of $G * H$, where g_i

$\in G$ and $h_i \in H$. For any

$g \in G * 1_H$, we have $g g_1$

$h_1 \cdots g_n h_n g^{-1} h^{-1}$

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$g^{-1}n \cdots h^{-1}1g^{-1}$
 $1 = 1$. The only way for
this to be true for all
 g is if $h = 1$ for all i .

Van Kampen's Theorem

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Algebraic Topology,
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course will primarily
use Chapters 0, 1, 2,

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and 3. Prerequisites. In addition to formal prerequisites, we will use a number of notions and concepts without much explanation.

Math 215A: Algebraic Topology

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Algebraic Topology.
This book, published in
2002, is a beginning
graduate-level
textbook on algebraic

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topology from a fairly classical point of view.

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Hatcher Solution

Solutions to Homework # 2 Hatcher, Chap. 0, Problem 16.1 Let $R_1 := M_{n,1}(\mathbb{R})$. $R = \{x \in R_1 \mid \sum_{k=1}^n x_k = 0\}$. We define a topology on R_1 by declaring a set $S \subseteq R_1$ closed if and only if, $\forall x \in R_1$, $\sum_{k=1}^n x_k = 0$, the intersection $S \cap \{x\}$

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of with the finite dimensional subspace $R_n = \{ (x_k)_{k=1}^n; x_k = 0; 8k > n \}$; is closed in the Euclidean topology of R^n . For each $x \in R_1$ set $j \sim x_j := \sum_{k=0}^{\infty} x^{2^k}$

Solutions to Homework # 1 Hatcher, Chap. 0, Problem 4.

A downloadable textbook in algebraic topology. What's in the Book? To get an idea

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you can look at the Table of Contents and the Preface.. Printed Version: The book was published by Cambridge University Press in 2002 in both paperback and hardback editions, but only the paperback version is currently available (ISBN 0-521-79540-0). I have tried very hard to keep the price of the paperback ...

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$1(x)$ and $G(x,1) = F(x,0) = f. 0(x)$, i.e. a homotopy between $f. 1$ and $f. 0$. Thus, the relation of homotopy among maps between two fixed spaces is reflexive, symmetric, and transitive, the latter by lemma 1, i.e. an equivalence relation. (c). Let $f. 0: X \rightarrow Y$ be a homotopy equivalence with

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homotopy inverse g .

Allen Hatcher: Algebraic Topology

By Lemma 1.15
(Hatcher), every loop in X based at x_0 is
homotopic to a product
of loops, where each
loop is either contained
in e or A . Since $n \geq 2$, a
loop contained in e is
nullhomotopic, so
every loop in X is
homotopic to a loop in
 A . Thus if $[f] \in \pi_1(X; x_0)$, there there is a loop

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f_0 : Also that $[f_0] = [f]$.
We have $f_0 = f$, so $[f_0]$
 $= [f_0] = [f_0] = [f]$

**Homework 3 MTH
869 Algebraic
Topology**

Algebraic Topology.
This book, published in
2002, is a beginning
graduate-level
textbook on algebraic
topology from a fairly
classical point of view.
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download it in
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download page.

Allen Hatcher's Homepage - Cornell University

We may assume the polynomial is of the form $p(z) = z^n + a_1 z^{n-1} + \dots + a_n$. If $p(z)$ has no roots in \mathbb{C} , then for each real number $r \geq 0$ the formula $f_r(s) = p(r e^{2\pi i s}) / |p(r e^{2\pi i s})|$ defines a loop in the unit circle S^1 .

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$1 \in C$ based at 1 . As r varies, f_r is a homotopy of loops based at 1 .

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Consider the homotopy $g_t = f \phi_t: S^{n-1} \rightarrow B$.

Then we lift the

homotopy g_t up to a
homotopy \tilde{g}_t :

$S^{n-1} \rightarrow E$ by applying
the CHP. The homotopy
 \tilde{g}_t may be considered
as a map $\tilde{h}: D_n \rightarrow E$,
where the disk D_n is

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covered by
($n-1$)-spheres as it is
shown, see Fig. 9.7 (b),
and the map h on
these spheres is given
by $\sim gt$.

NOTES ON THE COURSE “ALGEBRAIC TOPOLOGY”

Math 634: Algebraic
Topology I, Fall 2015
Solutions to Homework
#3 Exercises from
Hatcher: Chapter 1.2,
Problems 4, 7, 8, 9, 14,
15, 21 (Y path-

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connected).
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**Math 634: Algebraic
Topology I, Fall 2015
Solutions to ...**

Text: We will mostly follow chapters 3 and 4 of Algebraic Topology by Allen Hatcher. The book is available for free online at the author's website. as well as in print. Grades: The grade will be based on homework assignments.

Homework: A list of the

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homework problems
will be kept on this
webpage.

**Algebraic Topology
246A - Winter 2018**

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paperback.

INTRODUCTION Most of
this book is based on
lectures to third-year
undergraduate and
postgraduate students.

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It aims to provide a thorough grounding in the more elementary parts of algebraic topology, although

ALGEBRAIC TOPOLOGY - School of Mathematics

Solutions in Hatcher's Algebraic Topology; selected exercises from Chapters 0, 2, and 3 . Totally Indescribable; Totally Indescribable. Projects. Math. @cemulate.

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Allen Hatcher. Chapter
0 . Exercise 16 The
infinite sphere is
contractible Chapter 2 .
Exercise 1.1 Exhibiting
a Mobius strip a a
quotient of a two-
simplex

Algebraic Topology

Algebraic Topology,
Semester 1, 2015,
Zhou Zhang Weeks 1
to 13 Following
Chapters 0, 1 and 2 in
"Algebraic Topology"

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by Allen Hatcher

Overview Weeks 1-2:

Chapter 0, Useful

Geometric Notions

Weeks 2-7: Chapter 1,

Fundamental Group

Weeks 7-13: Chapter 2,

Homology Week 13:

Wrap-up Before We

Start The struggle

between intuitive idea

and rigorous ...

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Allen Hatcher (Cornell
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can order this in for
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introductory textbook
in algebraic topology is
suitable for use in a
course or for self-
study, featuring broad
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and a readable
exposition, with many
examples and
exercises. ...

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