OUTSTANDING MATHEMATICS FILMS

Produced by the

MATHEMATICAL ASSOCIATION OF AMERICA

Available Through

MODERN LEARNING AIDS

MATHEMATICAL INDUCTION

Presented by Leon Henkin in a film of two 30-minute parts.

Mathematical Induction is one of the most important but least understood portions of elementary mathematics. It has been misunderstood by students, teachers and textbook writers for generations, and its proper presentation is one of the most urgent tasks confronting teachers of mathematics. Dr. Henkin is an expert in the foundations of mathematics and has had wide experience in explaining mathematical induction to high school students.

3401—Part I **$200.00**

Dr. Henkin develops the intuitive idea of induction through a number of simple examples. By means of these he shows the need for a principle of this kind. He states this in terms of the notion of an inductive set and then illustrates it with a further example. (30 minutes—color)

3402—Part II **$200.00**

He applies the principle of mathematical induction to a more complicated example. Then he turns to the logical foundations of the principle of induction, and proves it on the basis of the axiom which says that the positive integers are well-ordered. (30 minutes—color)

THEORY OF LIMITS

Presented by E. J. McShane in a film of three parts

Most courses in calculus begin with an intuitive discussion of limits before the ideas of derivatives and integrals are introduced. Students find this particularly difficult and often never understand limits at all. Later in their courses in mathematics they are presented with the ϵ–δ notion, which is even more troublesome. The purpose of this film is to present limits from a modern point of view in a fashion which unifies the theory of limits of sequences and functions together with the theory of integration. This material is suitable for students who are taking a second course in calculus and who are ready to make a serious attempt at understanding the notion of a limit.

3411—Part I—Limits of Sequences **$150.00**

The limit of a sequence is defined using the concept of an "advanced set." This notion is developed through a number of intuitive examples and then is stated with mathematical precision. (34 min. —B & W)

3412—Part II—Limits of Functions and Limit Processes . . **$115.00**

The method of advanced sets is applied to define the limit of a real valued function. This definition becomes almost automatic because it is developed in a fashion analogous to the treatment of limits of sequences. The film continues with an application of this technique to the definition of an integral. (25 minutes—B & W)

3413—Part III—The Cauchy Criterion for Convergence . . **$60.00**

This part is devoted to a discussion of the Cauchy criterion for convergence. The use of the notion of an advanced set makes this presentation much more understandable than those which appear in most textbooks. (13 minutes—B & W)

WHAT IS AN INTEGRAL?

Presented by Edwin Hewitt in a film of two 29-minute sections.

This film is intended for students who have already seen the definition of the Riemann integral as a limit of sums, and who would like to obtain a deeper understanding of the ideas of integration. The students are led easily through simple examples to some of the more modern types of integrals. Once they have become interested in these, the teacher will undoubtedly wish to expand upon these ideas. The film is by no means intended to be a substitute for a careful definition of the definite integral or for practice in using it.

3421—Part I **$130.00**

The point of view adopted is that the definite integral of a function on the interval from 0 to 1 is simply an average value of the function. Furthermore, any averaging process that obeys certain reasonable assumptions has to be the ordinary definite integral. (29 minutes—B & W)

3422—Part II **$130.00**

One of the restrictions on the averaging process is dropped and it is shown that many new ways of averaging functions can be introduced. However, all of them are integrals of the Riemann-Stieltjes type. Integrals of this sort are briefly described and the representation theorem of F. Riesz is stated. This theorem is not proved in the lecture. Teachers may wish to give an outside proof of it. (29 minutes—B & W)

MAA film purchases are eligible for NDEA Title III funds.

THE KAKEYA PROBLEM

Presented by Professor A. S. Besicovitch in a film of two 30-minute sections.

The Kakeya Problem is concerned with the determination of the minimum area in a plane within which a line segment may be turned so that its direction is reversed. Professor Besicovitch is responsible for a solution of this problem in which he shows that no such minimum area exists. In other words, he demonstrates in the film a process whereby the rotation of a line segment may be performed within an arbitrarily small area.

3431—Part I **$200.00**

3432—Part II **$200.00**

MAA

MATHEMATICS FILMS

PURCHASE ORDER FORM

MLA

MODERN LEARNING AIDS
A Division of Modern Talking Picture Service, Inc.
3 East 54th Street New York 22, N. Y.

Ship films to:

NAME OF SCHOOL 1

NAME OF INDIVIDUAL TITLE 2

STREET ADDRESS 3

CITY STATE ZIP CODE 4

School Office To Which Invoice Is Sent:

NAME OF SCHOOL 5

NAME OF INDIVIDUAL TITLE 6

STREET ADDRESS 7

CITY STATE ZIP CODE 8

Please enter our order for prints of the following 16mm-sound films.

We understand that these are copyrighted films licensed only for showing by optical projection. We agree not to permit them to be shown on open or closed circuit television. Separate license is required for television or other reproduction.

FILM NO.	FILM TITLE	PRICE PER UNIT	NUMBER OF PRINTS	AMOUNT
3401	Mathematical Induction—Part I (color) (Henkin)	200.00		
3402	Mathematical Induction—Part II (color) (Henkin)	200.00		
3411	Theory of Limits Part I—Limits of Sequences (McShane)	150.00		
3412	Theory of Limits (McShane) Part II—Limits of Functions and Limit Processes	115.00		
3413	Theory of Limits (McShane) Part III—The Cauchy Criterion for Convergence	60.00		
3421	What is an Integral?—Part I (Hewitt)	130.00		
3422	What is an Integral?—Part II (Hewitt)	130.00		
3431	The Kakeya Problem—Part I (color) (Besicovitch)	200.00		
3432	The Kakeya Problem—Part II (color) (Besicovitch)	200.00		

TOTAL ORDER _____

Inquiries on Film Manuals should be directed to
The Mathematical Association of America
c/o The University of Buffalo, Buffalo 14, New York.

_____
Date

_____
Textbook used

_____
Authorized by

_____
Title

MAA

MATHEMATICS FILMS

SUBSCRIPTION

ORDER FORM

Do not write in this space

Ex. _____

A.A. #_____

P.O. #_____

State Code _____

MODERN LEARNING AIDS
A Division of Modern Talking Picture Service, Inc.
3 East 54th Street New York 22, N. Y.

Ship films to:

NAME OF SCHOOL 1

NAME OF INDIVIDUAL TITLE 2

STREET ADDRESS 3

CITY STATE ZIP CODE 4

Mail invoice to:

NAME OF SCHOOL 5

NAME OF INDIVIDUAL TITLE 6

STREET ADDRESS 7

CITY STATE ZIP CODE 8

This list of films is available for the current school year. List first choice playdate, if this is not available we will assume your second choice is for one week later, and your third choice is for 2 weeks later unless otherwise instructed orindicated. We will confirm booking for one of these dates and guarantee delivery by date confirmed or credit for booking will be given.

Basic booking rate is for a 3-day period of which the indicated playdate is the start. Films may be booked for 8 school days at double the basic booking rate. Please indicate when ordering. Prints are expected to be shipped back immediately following booking period for use by others.

FILM NO.	FILM TITLE	PLAYDATE	
3401	Mathematical Induction—Part I (color) (Henkin)		
3402	Mathematical Induction—Part II (color) (Henkin)		
3411	Theory of Limits Part I—Limits of Sequences (McShane)		
3412	Theory of Limits Part II—Limits of Functions and Limit Processes (McShane)		
3413	Theory of Limits Part III—The Cauchy Criterion for Convergence (McShane)		
3421	What is an Integral?—Part I (Hewitt)		
3422	What is an Integral?—Part II (Hewitt)		
3431	The Kakeya Problem—Part I (color) (Besicovitch)		
3432	The Kakeya Problem—Part II (color) (Besicovitch)		

Each part is separate and is booked individually.
A single invoice will be rendered for all films booked on this order and will be mailed on the playdate of your first booking

Subscription rates for each order

	1 to 7 bookings	8 or more bookings
3 school days	$6.00 ea.*	$5.75 ea.*
8 school days	$12.00 ea.*	$11.50 ea.*

**Includes 25¢ transportation and damage fee.*

_____ bookings at $5.75 each
_____ bookings at $6.00 each
_____ bookings at $11.50 each
_____ bookings at $12.00 each
TOTAL: $_____

We understand that these are copyrighted films licensed only for showing by optical projection. We agree not to permit them to be shown on open or closed circuit television. Separate license is required for television or other reproduction.

_____
Date

_____
Textbook used

_____
Signature

PRINTED IN U.S.A.

MAA FILMS
Are Available from MLA In These Three Ways

SUBSCRIPTION

This is a series plan by which any number of MAA films may be ordered for specific periods of use. The basic period is three school days. The basic rate is $5.75 per film when 8 or more films are ordered. Films may be ordered for eight days use at double the basic rate. When less than 16 films are ordered, there is an additional charge of: $.25 for 3 days use; and $.50 for 8 days use.

If your first choice of playdate is not available, we will assume your second choice is for one week later. Films are expected to be shipped back immediately following requested period for use by others. MLA's network of film libraries and large inventory of film prints assure you of good service under the Subscription Plan.

We will bill you for the entire subscription at the start of service.

PURCHASE

MAA films are available for purchase as a complete series or by individual titles. Preview prints are available without charge to those contemplating purchase. Prices are indicated below each film description and on the order form. NDEA funds may be used.

LEASE TO BUY

The MAA series, or titles of your selection, is available for purchase on a three payment plan. You pay 35⅓% of the purchase price for the use of the prints for one year without obligation to renew. When you make two more payments of the same amount during the next two years, the prints become your property.

MODERN LEARNING AIDS
A Division of Modern Talking Picture Service, Inc.
3 East 54th Street New York 22, N. Y.

ATLANTA, GEORGIA 30308
714 Spring Street N.W.
TRinity 5-5666

CHICAGO, ILLINOIS 60611
160 E. Grand Avenue
467-6475

DALLAS, TEXAS 75207
1411 Slocum Street
RIverside 2-4106

SAN FRANCISCO, CALIF. 94105
16 Spear Street
YUkon 2-9414

SUMMIT, NEW JERSEY 07901
315 Springfield Avenue
277-6300

(METRO TORONTO) ONTARIO
1875 Leslie Street
Don Mills
444-7347

MLA 341-2-J64-15

PLACE
STAMP
HERE

Modern Learning Aids

A DIVISION OF MODERN TALKING PICTURE SERVICE, INC.

3 EAST 54th STREET

NEW YORK, NEW YORK 10022