A TREATISE ON GEOMETRICAL CONICS: IN ACCORDANCE WITH THE SYLLABUS OF THE ASSOCIATION FOR THE IMPROVEMENT OF GEOMETRICAL TEACHING

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649067657

A Treatise on Geometrical Conics: In Accordance with the Syllabus of the Association for the Improvement of Geometrical Teaching by Arthur Cockshott & F. B. Walters

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

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A TREATISE

ON

GEOMETRICAL CONICS

IN ACCORDANCE WITH THE SYLLABUS
OF THE ASSOCIATION FOR THE IMPROVEMENT
OF GEOMETRICAL TEACHING.

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London:
MACMILLAN AND CO.
AND NEW YORK.
1889

Cambridge:
PRINTED BY C. J. CLAY, M.A. & SONS,
AT THE UNIVERSITY PRESS.

PREFACE.

THE need of some recognized sequence of propositions in Elementary Geometrical Conics has long been very generally admitted. This need the Association for the Improvement of Geometrical Teaching has attempted to supply by the publication of the Syllabus of Geometrical Conics, which was drawn up by an influential Committee and accepted by the Association at their annual General Meeting in January, 1884.

In the following pages we have given proofs of the propositions in the hope that they may be found useful to those teachers who desire to adopt the order to which the Association has given the weight of its approval.

We have introduced a chapter on Orthogonal Projection immediately after that on the Parabola, as we think it important that the student should understand as early as possible the close connection between the ellipse and circle and should be introduced at once to a method by which so

many properties of the ellipse may be deduced from well-known properties of the circle.

At the end of the book will be found a large collection of Cambridge problems; we have given a list of important properties of Conics, not included in the propositions in the text—all of which are considered as well known and may therefore be assumed in the solution of any other problems.

A. C.
F. B. W.

May, 1889.

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PARABOLA.

DEF. I. A *parabola* is the locus of a point (P), whose distance from a fixed point (S) is equal to its distance (PM) from a fixed straight line (XM),

$$(SP = PM).$$

II. The fixed point (S) is called the *focus*.

III. The fixed straight line (XM) is called the *directrix*.

DEF. A curve is *symmetrical with respect to a straight line*, if, corresponding to any point on the curve, there is another point on the curve on the other side of the straight line such that the chord joining them is bisected at right angles by the straight line.

DEF. The straight line is called an *axis* of the curve.

DEF. A *vertex* is a point at which an axis meets the curve.