

**KEY TO ROBINSON'S ALGEBRA:
CONTAINING ALSO A SHORT
TREATISE ON THE INDETERMINATE
AND DIOPHANTINE ANALYSIS AND
SOME MISCELLANEOUS EXAMPLES**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649494408

Key to Robinson's Algebra: Containing Also a Short Treatise on the Indeterminate and Diophantine Analysis and Some Miscellaneous Examples by Horatio N. Robinson

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

HORATIO N. ROBINSON

**KEY TO ROBINSON'S ALGEBRA:
CONTAINING ALSO A SHORT
TREATISE ON THE INDETERMINATE
AND DIOPHANTINE ANALYSIS AND
SOME MISCELLANEOUS EXAMPLES**

K E Y

TO

ROBINSON'S ALGEBRA;

CONTAINING, ALSO,

**A SHORT TREATISE ON THE INDETERMINATE
AND DIOPHANTINE ANALYSIS,**

AND

SOME MISCELLANEOUS EXAMPLES.

Designed for Teachers and Students.

**CINCINNATI:
JACOB ERNST, 112 MAIN STREET:**

1852.



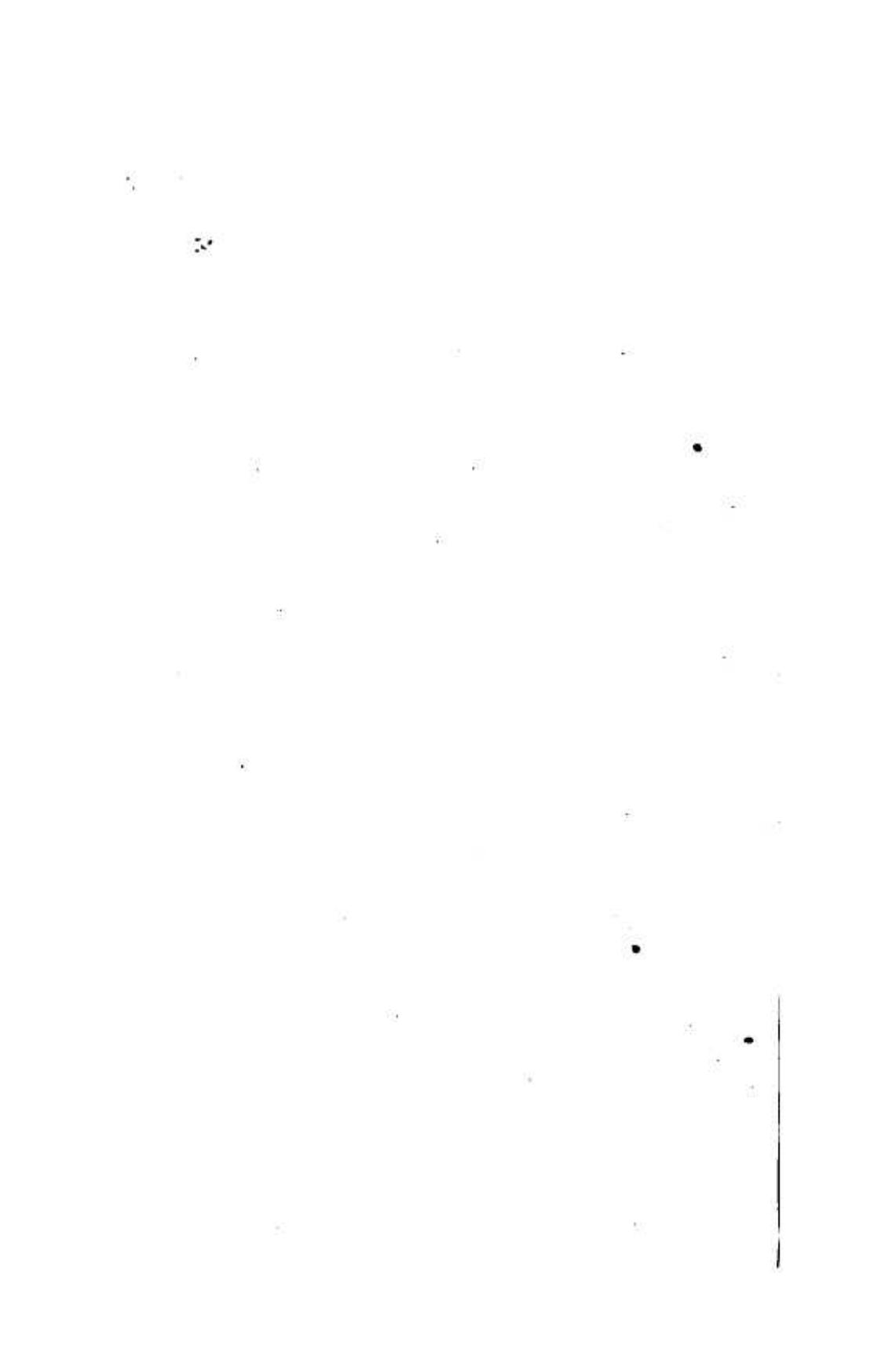
Entered according to act of Congress, in the year 1947, by
HORATIO N. ROBINSON,
in the Clerk's Office of District Court of the District of Ohio.

P R E F A C E .

A KEY, to a mathematical work, is very proper in its place ; but to be constantly at hand, and consulted too often, might prove injurious : we must not, however, confound the improper use of a thing with the thing itself. Those who condemn keys, in general terms, should condemn teachers also ; for a key is neither more nor less than a teacher, in another shape.

The self-taught are generally sound and vigorous ; but if they disregard the works and teachings of others, they will be found to be wanting in that certain symmetry and polish of mind, so characteristic of educated men.

So it is with an algebraist ; he may go through his text-books, solve every problem, independent of all external aid, and if he does not compare his work with the works of others, he cannot know whether he is skillful or otherwise ; for it is only by comparison that we measure excellence. No solution of a problem, or of an equation, should be called good, if better can be found ; hence it is important that more than one standard of attainment should be before the pupil ; and those who really become eminent, in any science, are those whose talents and dispositions enable them to gather knowledge from every possible source.



KEY

to

ROBINSON'S ALGEBRA.

SECTION II.

CHAPTER I.

EQUATIONS.

None of the questions in this chapter require the aid of a key, until we come to the 15th, page 65.

$$(15.) \quad \left(\frac{4x-4a}{3} - a \right)^4 = \frac{16x-16a}{9} - \frac{4a}{3} = \text{his}$$

stock at the commencement of the third year, before his expenses are taken out.

$$\text{Hence,} \quad \left(\frac{16x-16a}{9} - \frac{4a}{3} - a \right)^4 = 2x$$

Reduced gives $x=14800$, *Ans.*

(16.) Put $a=99$, x =time past. Then $a-x$ =time to come, and per question,

$$\frac{2x}{3} = \frac{4a-4x}{5} \dots \dots \dots x=54.$$

(17.) Let x = the whole composition.

Then per question,

$$\frac{2x}{3} + 10 = \text{nitre.}$$

$$\frac{x}{6} - 4\frac{1}{2} = \text{sulphur.}$$

$$\frac{2x}{21} + \frac{10}{7} - 2 = \text{charcoal.}$$

By addition, $\frac{2x}{3} + \frac{x}{6} + \frac{2x}{21} + 3\frac{1}{2} + \frac{10}{7} = x$

Multiply by 6, and drop $5x$ from both sides, and we have

$$\frac{4x}{7} + 21 + \frac{60}{7} = x$$

or, $4x + 21 \cdot 7 + 60 = 7x \dots x = 69.$

(18.) Put $a = 183$; $x =$ what the 1st received; then
 $a - x = 2d$ received.

Per question, $\frac{4x}{7} = \frac{3a - 3x}{10} \dots x = 63.$

(19.) Put $a = 68$, $x =$ the greater part, and $a - x =$ the
less. $84 - x = 3(40 - a + x) \dots x = 42.$

(20.) The distance from A to B put $= 2x.$

The distance from C to D " $= 3x.$

Then, 3 times the distance from B to C must be

$$\frac{x}{2} + \frac{3x}{2} \text{ or the distance is, } \frac{x}{6} + \frac{x}{2}$$

Hence the whole distance is, $5x + \frac{x}{6} + \frac{x}{2} = 34.$

(21.) Let $x =$ the flock.

The first party left him $\frac{2x}{3} - 8.$

The second left $\frac{x}{3} - 3 - 10 = 3.$

(23.) Observe that for every vessel he broke he lost 12 cents: 3 cents fee and 9 cents forfeiture.

$$300 - 12x = 240 \dots \dots \dots x = 5.$$

(24.) Had he not been idle he would have been entitled to ab cents. But he was idle x days at a loss of $(b+c)$ cents. Hence, $ab - (b+c)x = d$.

$$x = \frac{ab-d}{b+c}$$

(25.) Put $5x =$ less part

Then $a - 5x =$ the greater part.

Per question, $a - 7x = 20x - \frac{3}{7}(a - 5x)$

$$7a - 49x = 140x - 3a + 18x$$

or, $204x = 16a = 10 \cdot 204$

or, $x = 10$

Therefore, $5x = 50 =$ the less part.

(26.) Let $8x =$ the price of the horse.

Then $a - 8x =$ chaise. $a = 341$.

Per question, $2a - 16x - 3x = 24x - \frac{5}{7}(a - 8x)$

or, $2a = 43x - \frac{5}{7}(a - 8x)$

$$14a = 301x - 5a + 40x$$

$$19a = 341x \quad \text{or,} \quad x = 19$$

$$8x = 152 \text{ Ans.}$$

(28.) Let $5x =$ his money.

After he first lost and won 4 s., he had $4x + 4$.

He again lost and won, and then had $3x + 3 + 3$.

$\frac{1}{5}$ of this must equal 20, or, $3x + 6 = 24$.

$$x = 6$$

$$5x = 30 \text{ Ans.}$$