







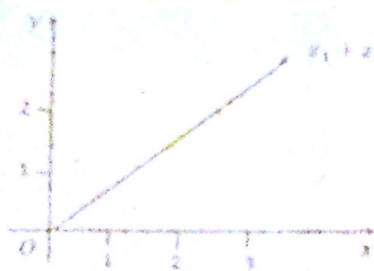
$$r = \sqrt{\frac{128}{4}} = 2$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Fundamentals of Elementary

# Mathematics

Concepts for Fresh Undergraduates

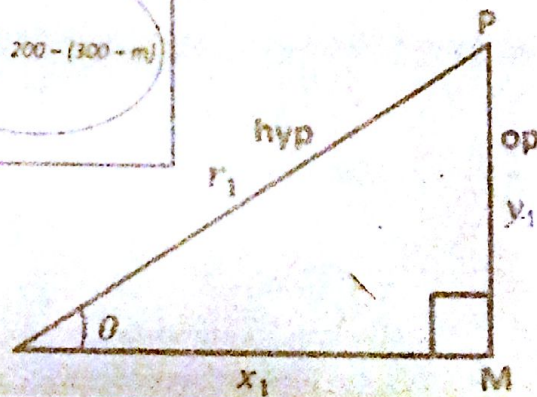
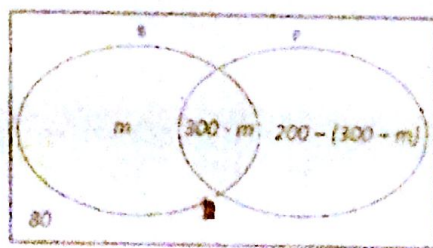


$$r = \sqrt{\frac{128}{4}} = 2$$

$$\alpha + \beta = -\frac{b}{a} = -\frac{\sqrt{3}}{1} = \sqrt{3}$$

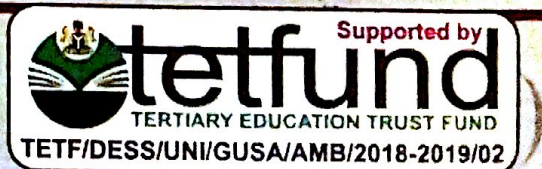
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

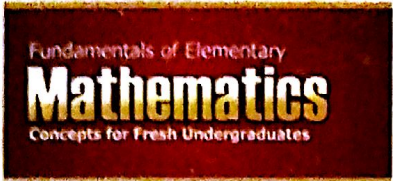
$$\left(\frac{1}{3}\right)^{11} = \frac{1}{(3^2)(3^7)} = \frac{1}{3^9} = \left(\frac{1}{3}\right)^9$$



**Emmanuel Omokhuale**  
**Muhammad Jabaka Lawali**

$$n(M) = 384, n(C) = 404, n(P)$$

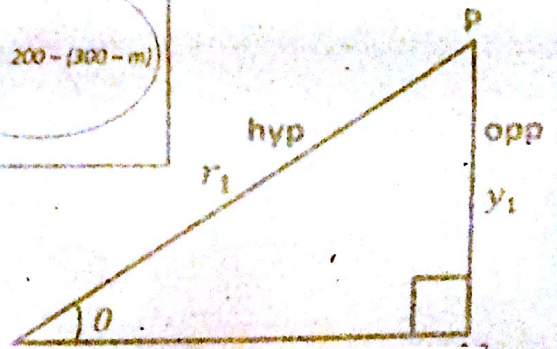
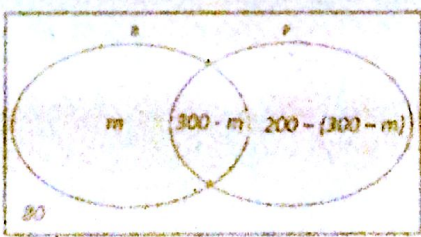




Emmanuel Omobuade  
Muhammad Zabaka Lawal  
statfund

This book gives fundamental insight into the concepts of elementary mathematics for fresh undergraduates. The book provides basic concepts and illustrations for easy understanding of elementary mathematics, and the book is structured into chapters. The textbook comprises of nine (9) chapters, with each chapter highlighting different fundamental concepts required by all learners of mathematics. The chapter one explains numbers with emphasis on the real number system. Chapter two focuses on elementary set theory, operations on set and Venn diagram with some applications which are useful in real life situations and activities. Chapter three provides fundamentals on number sequences viz: Arithmetic and Geometric progressions. Chapter four and five focus on permutations, combinations and binomial series respectively. Chapter six deals with quadratic equations. Chapter seven discusses mathematical induction presenting detail examples. Trigonometric ratios, identities and formulas useful in the study of triangles in relation to their sides and angles were presented in chapter 8 while chapter nine which is the last chapter gives basic insight on complex numbers.

This book provides essential guide to understanding of mathematics. The methodology and approach are simple, examples and explanations are clear and the presentation follows an ordered and well patterned sequence that would be of great use to both teachers and students at the undergraduate levels.



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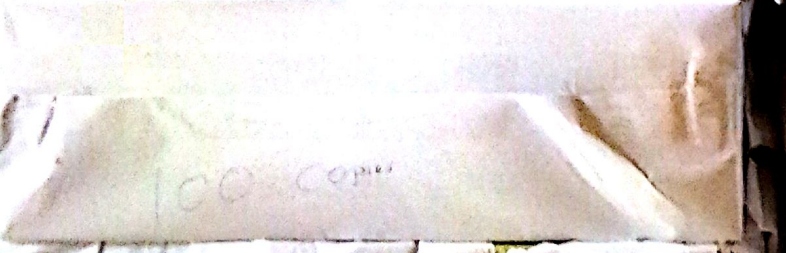
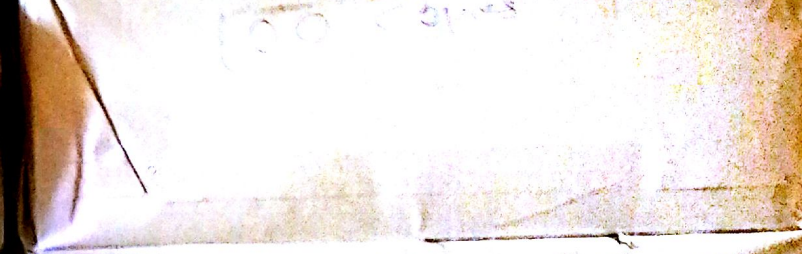
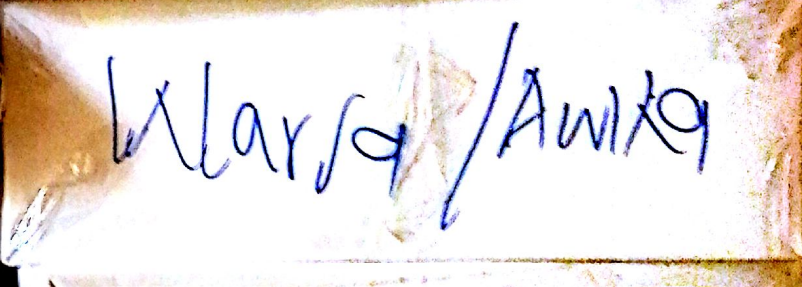
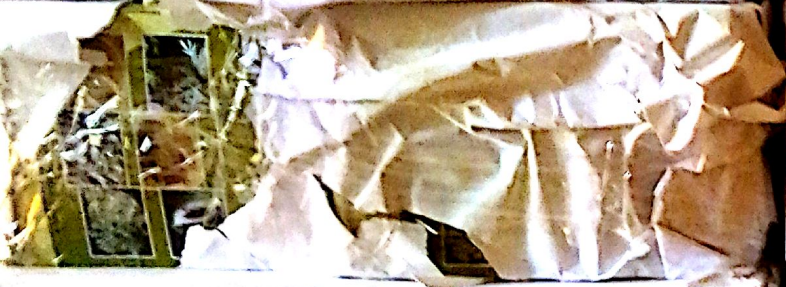
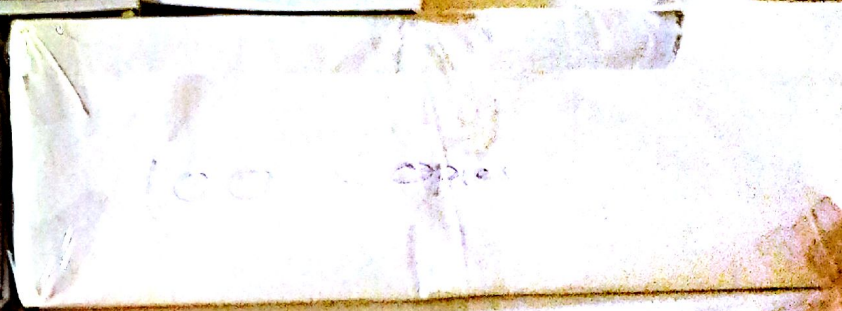
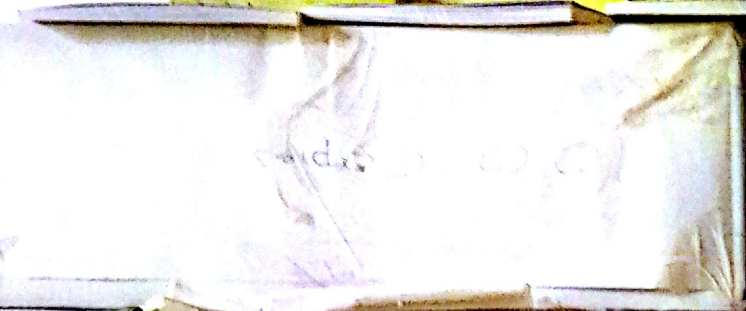
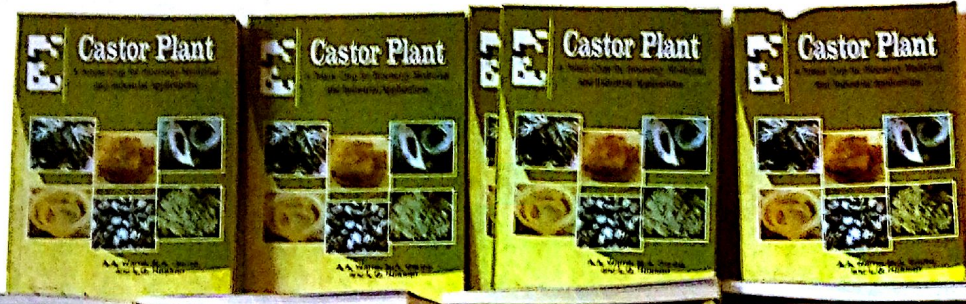
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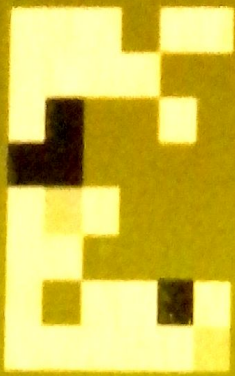
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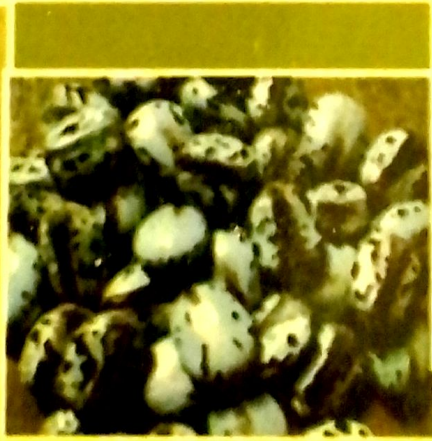
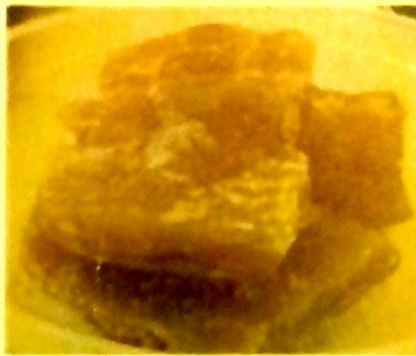






# Castor Plant

A Potent Crop for Bioenergy Medicinal  
and Industrial Applications



**A.A. Warra, N.A. Garba  
and L.G. Hassan**

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## ABOUT THE BOOK

The book covers the potential of castor in areas of medicinal plant products and various industrial applications. It covers the use of castor in biofuel production It expatiated the cosmetic and detergency potential of castor oil. It deals with how castor oil is increasingly becoming an important bio-based raw material for industrial applications ranging from bioinsecticides to biofertilizers etc. It captures how castor crop play great role in environmental remediation and resource recovery. It provides guide for castor value addition among investors in other to exploit its industrial potentials. It provides useful information on waste generation during industrial production and how to get rid or minimize the waste by recycling and other means. More importantly, the book provides an important explanation on how the competitive nature of castor plant products in industrial and domestic uses made castor a valuable resource with multiple applications. The book mainly captured the medicinal uses of castor, industrial and domestic applications of its products. The book have highlighted the prospects of castor in phytoremediation of contaminated lands, generation of feed-grade supplements, production of bioenergy from biofuel, preparation of cleansing agents, polymer and composites production, industrial preparation of polyurethanes, application in textile and dyes, production of corrosion inhibitors, applications in biotechnology, nanotechnology and conversion of waste to wealth. The book also provides guide for strategies in developing castor input market for maximum utility as an industrial raw material.



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