

ગુજરાત રાજ્યના શિક્ષણવિભાગના પત્ર-ક્રમાંક
પઠપ / 102012 / 901 / છ, તા. 30-8-2012 થી મંજૂર

MATHEMATICS

Standard 12

(Semester IV)



PLEDGE

India is my country.
All Indians are my brothers and sisters.
I love my country and I am proud of its rich and varied heritage.
I shall always strive to be worthy of it.
I shall respect my parents, teachers and all my elders and treat everyone with courtesy.
I pledge my devotion to my country and its people.
My happiness lies in their well-being and prosperity.

Price : ₹ 94.00



Gujarat State Board of School Textbooks
'Vidyayan', Sector 10-A, Gandhinagar-382 010

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PREFACE

The Gujarat State Secondary and Higher Secondary Education Board have prepared new syllabi in accordance with the new national syllabi prepared by the N.C.E.R.T. These syllabi are sanctioned by the Government of Gujarat.

It is a pleasure for the Gujarat State Board of School Textbooks, to place this textbook of **Mathematics** before the students for **Standard 12 (Semester IV)** prepared according to the new syllabus.

The manuscript has been fully reviewed by experts and teachers teaching at this level. Following the suggestions given by teachers and experts, we have made necessary changes in the manuscript before publishing the textbook.

The Board has taken special care to make this textbook interesting, useful and free from errors. However, we welcome suggestions, to enhance the quality of the textbook.

H. K. Patel GAS
Director

Dr Nitin Pethani
Executive President

Date : 1-7-2013

Gandhinagar

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Printed by :

FUNDAMENTAL DUTIES


It shall be the duty of every citizen of India :

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
 - (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
 - (c) to uphold and protect the sovereignty, unity and integrity of India;
 - (d) to defend the country and render national service when called upon to do so;
 - (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
 - (f) to value and preserve the rich heritage or our composite culture;
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 - (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
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 - (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.
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About This Textbook...


We are very pleased to present before you the textbook for Mathematics of semester IV for standard XII following the new syllabus prepared by Gujarat Secondary and Higher Secondary Board on the basis of NCERT syllabus, in extension of Mathematics textbooks of semester I and semester II for standard XI and semester III of standard XII.

This textbook has been prepared originally in English as in the case of textbooks of semester I and II for standard XI and semester III of standard XII. The manuscript has been thoroughly examined by learned teachers from schools and colleges through a workshop organized in the month of June. The suggestions and proper amendments had been accepted and the revised manuscript has been translated in Gujarati. The Gujarati version was also examined by teachers from schools and colleges and the necessary amendments were made. The English manuscript and the translated version in Gujarati were examined by language experts and the corrections were made. This way the final draft of the manuscript was prepared.

A second review had been carried out in the end of July by subject experts from universities and technological colleges. They were retired mathematics professors of eminence. Their recommendations were accepted and amendments were made.

In chapter 1, we apply differentiation to various problems in mathematics like coordinate geometry, approximation; maximum and minimum values of a function and rates of change of one variable with respect to another, especially with respect to time which will consequently help to study applications of differentiation to science. Chapter 2 continues the study of integration which has began in semester III. Here, since the study continues, the prerequisite is knowledge of indefinite integration studied in semester III. Some examples can be studied by techniques of any of the methods from these two chapters. Chapter 3 introduces definite integration. Theorems and examples freely make use of indefinite integration techniques. Chapter 4 is about an application of integration. It shows how to calculate certain areas bounded by some known curves. Chapter 5 is further application of integration to solve differential equations. Here, only some simple techniques are studied. Chapter 6 is the study of algebra of vectors useful in three dimensional geometry. The concept of Vectors was introduced in semester II. These concepts are revised. Abstract approach to vectors and geometrical significance are studied. Chapter 7 deals with applications of vectors to three dimensional geometry of lines and planes.

In between, some explanations are given in boxes. They are meant to explain further the concept introduced earlier or to add some comments on them. They are for more understanding only.



Attractive four-colour title, four-colour printing and figures make this textbook visually rich and adds more to its utility value. Plenty of illustrations and exercises are integrated to explain various concepts and variety of problems. They will help the students in achieving good marks in semester examination as well as competitive examinations.

We thank all who have helped to prepare this textbook. We hope that all students, teachers and parents would like this textbook. Positive suggestions to enhance the quality of this textbook are welcome.

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