EVALUATION OF X CLASS MATHEMATICS TEXTBOOK

OF

ANDHRA PRADESH

EVALUATORS:

D. BASAVAYYA
B. JAYARAM BHAT
B.S.P. RAJU
N.B. BADRINARAYANA

REGIONAL INSTITUTE OF EDUCATION, MYSORE-570 006
(NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING, NEW DELHI)

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FOREWORD

The National Policy on Education (NPE), 1986 has emphasised the need for qualitative improvement of school education particularly in the area of Science and Mathematics. To meet this demand, in most of the states, the textbooks at school level have been revised by introducing some new concepts and methodology. As a part of improving the quality of textbooks, Andhra Pradesh Government has revised the Mathematics textbook of X class in 1998. Teachers using this textbook expressed their difficulties in teaching some of the newly introduced topics. Therefore, SCET, Hyderabad requested Regional Institute of Education, Mysore in one of the State Co-ordination Committee (SCC) meetings to develop a Teacher Handbook covering the discussion on difficult topics, methodology, problem solving, etc. based on the evaluation of the revised X class text book. Accordingly an attempt has been made by RIEM to fulfil the task in two phases, viz. (i) analysis of textbook, (ii) preparation of Handbook. The analysis has been completed and the observations are reported here.

I thank my colleagues **Dr. D. Basavayya, Dr. B.S.P. Raju** and **Mr. B. Jayaram Bhat** for their effort in fulfilling the task. My thanks are also due to my earlier colleagues **Dr. N. Badrinarayana** and **Dr. V. Shankaram** for their timely help in bringing out the report in this form.

I hope this report will be useful in improving the quality of X class Mathematics textbook of Andhra Pradesh.

Mysore
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PROF. G. RAVINDRA
PRINCIPAL

EVALUATION OF X CLASS MATHEMATICS TEXTBOOK OF ANDHRA PRADESH

Introduction

Mathematics textbook of class X of Andhra Pradesh was revised recently. Teachers using these textbooks expressed their difficulty in teaching some of the newly introduced topics. Therefore, SCERT, Hyderabad requested in earlier SCC meeting to develop a Teachers Handbook covering the discussion on difficult topics with methodology, problem solving, etc. based on the evaluation of the revised X class textbook.

This task was planned to perform in two phases - (i) analysis of X class Mathematics textbook, (ii) preparation of Handbook Analysis has been completed and the concepts for inclusion in the Handbook have been identified.

The following aspects considered while evaluating the textbook.

Aspects in Mathematics textbook Evaluation.

A systematic record of merits and limitations of the usefulness of the textbook is needed for the benefits of teachers.

Type of Evaluation

A textbook may be evaluated on the basis of simple review to get an overview of the book, i.e. just to find the scope and nature of material it contains. Such evaluation is called a simple review. When the book is evaluated from a particular point of view, it may be termed as an elemental evaluation. Sometimes aspect evaluation may be done by considering the aspects like planning, selection of content, presentation of subject matter,

language use and physical features of the book. Quantitative/qualitative evaluation may also be done keeping in mind the following aspects:

i) Statement of the facts

ii) Stated conclusions and generalisations

iii) Definitions

iv) Questions posed but answered immediately

v) Questions requiring students to analyse data

vi) Statements posing problems to be solved by students

vii) Statements requiring students to form their own conclusions

viii) Questions that arouse students' interest

ix) Similarly for illustrations, learning, exercises and summaries of the text

Steps in Textbook Evaluation

The following steps may be followed in textbook evaluation.

i) Identify major aspects of the textbook such as selection of content, organisation and presentation, illustration, etc.

ii) Define each major aspect into a specific attribute which represents the characteristic of a good textbook in a subject such as accuracy, up-to-dateness, etc. under content selection.

iii) Construct or select appropriate evaluation tools to be used. These may be in the form of analysis sheets, questionnaires, rating scales, checklists, score cards, etc.

iv) Select a panel of persons to evaluate the textbook like content special lists, method masters, language experts, etc.

- Highlighting unity of life in diverse forms

Content analysis format

The following format is used to analyse the content.

Reference (section, concept, page number, line number)	Observation (deficiency for improvement)	Suggestions for improvement

Observations

1. More clarity is required in some definitions.
2. Activities could be made more lively and curious.
3. Consistency is necessary in using symbols/words.
4. Wrong concepts and illustrations are noticed in some places.
5. Units of the values are not indicated in some of the situations.
6. Teaching aids should have been suggested.
7. No where instructional objectives are mentioned.
8. Questions in the exercises are not graded according to difficulty level. No challenging problems are given for gifted students.
9. There is no much scope for self-learning.
10. Provision may be made for remedial instruction.
11. Sample unit test is not given.
12. Number of typographical errors are found.
13. Overall the content is well covered.
14. Important formulae, definitions, etc. are shown very well in boxes.
15. There is a scope for improvement.

- Suitability of the format
    - suitable size
    - appropriate bulk
- Paper
    - proper texture
    - suitable grammage
    - proper shade
- Reasonable pricing
- Printing
    - lack of margins
    - good impressions
    - legibility
    - pleasantness
- Binding
    - suitable stitching for curability and convenience in opening the book
    - quality of covers, pasting of end papers, attractiveness of covers

10. Reflection on national objectives

- Stress on conservation of life and resources
- Development of unbiased outlook towards various religions, communities gender dicts, etc.
- Avoidance of material prejudicial to national interest
- Stress on work experiences

- Inclusion of enrichment material for bright students in the form of supplementary readings or assignments in exercises
- Provision for graded review exercises in each chapter

9. Physical aspects
    - Prelims
        - Brevity and purposefulness in preface/foreword
        - Detailed table of contents
        - List of important formulae, symbols and abbreviations
        - Inclusion of relevant portions of the syllabus
        - Inclusion of instructional objectives of Mathematics
    - Typography
        - Type size and space

            - appropriate type, size for the main text and tables

            - appropriate type face for exercises

            - highlighting formulae, generalisations

        - Appropriate spacing

            - interword and inter-line spacing

            - indention paragraphs

            - uniformity

        - Proper margins

            - width

            - uniformity of the length of lines

- Emphasis on structural themes (major ideas)

5. Accordance with pupils maturity level
    - Comprehensibility of the language used
    - Appropriateness of concepts introduced
    - Provision for meeting pupils natural and social environment
    - Appropriateness of the extent of treatment of the subject
6. Involvement of pupils
    - Illustrations requiring pupils to do some thinking
    - Summaries raising new questions for pupil to think
    - Review exercises providing for individual and group activities
    - Textbook reflecting the use of problem solving approach
7. Developing pupils language
    - Introduction of element of fun
    - Introduction of biographical sketches and romantic incidents or anecdotes
    - Use of illustrations and examples from pupils environment
    - Provision in review exercises for assignment requiring pupils participation (improvision projects, etc.)
8. Provision for meeting the individual differences
    - Use of simple language comprehensible to all pupils
    - Use of varied forms of illustrations
    - Use of illustrations from both rural and urban environment

- Up-to-dateness of the subject matter
- Use of standard terminology and form of expression
- Right assumption about students prior knowledge
- Suitable coverage of a range of learning methods
- Right choice of activities to maintain the learners interest
- Use of the investigatory approach in presentation of content
- Emphasis on the method of inquiry
- Emphasis on major concepts and generalisations
- Reflection of methods and tools
- Acquaintance with the nature and script of language
- Reflection of the limitations of language use
- Provision for ancillary aids

4. Effectiveness in teaching-learning situation

- Suitability of the units/chapters formed
- Consistency in the pattern of structure each unit
- Appropriateness of sequencing of the units
- Adoption of the integrated approach in presenting the material
- Highlighting of important features of content
- Accordance with the previous learning of students
- Provision of motivation of students
- Placement of concepts in the graded manner
- Recurrent use of concepts for reinforcement

v) State minimum acceptable standards for different aspects to be judged. These may vary with respect to different aspects, such as selection of content, presentation, illustration, review exercises, etc.

vi) Record data in the analysis sheet.

vii) Summarise the evidence in a score card and reporting proforma.

viii) Interpret the scores objectively.

ix) Feed-back the results to the concerned agencies and authors for improvement of the textbook.

Evaluation Criteria

The different criteria for textbook evaluation may be summarised as below

1. Fulfilment of the curricular requirements
   - Relevance to the curricula of related subject
   - Teachability of content within the prescribed time-limit
2. Attainment of instructional objectives
   - Development of functional understanding of language concepts
   - Development of problem-solving abilities
   - Development of easy-communication abilities
3. Appropriateness of content
   - Conformity of the prescribed syllabus
   - Adequacy of the subject matter
   - Relevance of illustrations in the text
   - Accuracy of facts and concepts

16. Some of the concepts in Trigonometry chapter need for improvement.

17. Key concepts could have been written with more clarity and precision.

18. Linear programming and matrices chapters should have been at one place say chapters 9 and 10.

19. Font sizes of the letters are not uniform.

20. No uniformity in using review exercise and review.

21. In statistics chapter more explanation for central tendency, explanation for the division of a constant 'c' in shortcut formula for $\bar{x}$.

22. Usage of 'Join 00' is not appropriate. It should be 'Draw 00' or 'Join 0,0'.

23. Usage of trigonometric functions without describing them is not advised. If it is unavoidable, reorganise the chapters.

Detailed content analysis is given in the following pages. The book considered for analysis is of new impression 1998.

Page Reference	Observation	Suggestion for Improvement
2	Line 8 - Given a statement p, another statement … After first table, first line	'which is' to be included as indicated below Given a statement p, another statement which is the negation … 'tabel' is to be corrected as 'table'.
3	After table first line … p and q, p∧q, … Last line	This is to be corrected as … p AND q i.e. p∧q … Before this line 'In the above example' is to be added
4	Example 2. First line Next line	Spelling of Mathematics is to be corrected. At the end of the sentence, 'statements' instead of statement. 'to' is to be replaced by 'two'.
6	Seventh line from below	To be corrected as If a triangle is not isoseles then it is not equilateral. This is a true statement.
8	Example 3, Table 3, first row Exercise-1, Problem 1	Replace (~p) → q by (~p) ↔ q {It should be corrected as 1. Fill in the blanks and other '1' is to be dropped}
10	Problem 11, (ii) and (iv)	Correct the spelling of going
11	Second line from bottom	Replace 'all' by 'only'
12	Under Algebra of statements the first sentence	This sentence to be corrected as 'There are a number of logically equivalent fundamental statements as given below.
13	Tenth line from bottom Third line from bottom	The sentence should be corrected as - For x = 1 it is a true statement whereas for other values it is false. 'pharases' to be corrected as 'phrases'
14	The first paragraph under 1.5 proofs; Direct and Indirect	In mathematics we are mostly interested in proving given results. There are two important methods of proof - Direct

		and Indirect. In the method of direct proof we begin with the given statement p and end up through a logical sequence of steps. In the case of indirect proof we proceed by assuming that the result is false. Then we arrive at a contradiction implying that the desired result must be true.
15	Second line Sixth line Second paragraph from bottom	Delete the word 'given'. Include 'a' between 'by' and 'counter example'. This is to be deleted because, the figures are self explanatory.
16	Line immediately above example 1 Example 1	Replace this line by Let us study a switching network and the cases in which current flows. Delete example 1 and its solution Drop '2'
17	Example 2	The correction in the solution should be made as indicated in the text.
18	First sentence under SETS	This sentence should be corrected as In classes VIII and IX you are introduced to the notion of a set.
19	Problem No. 6 first sentence. Problem 13, second sentence	This is to be corrected as Draw the Venn diagram for three overlapping sets A, B and C. It seems there is something missing in this problem. To get the given answer the second sentence should be changed as It is known that newspaper C is read by ...

24	The sentence between Laws 8 and 9. Law 16 Last two lines	This sentence should be rewritten as In all the above statements, if we replace $\cup$ by $\cap$, $\cap$ by $\cup$, μ by ϕ and ϕ by μ we get the following respective true statements. This line should be as 16. $A \cup \phi = A$. These should be deleted.
26	Exercise 1, Problem 3	Answers for truth values are not given. These should be as i) F ii) T iii) T iv) T v) T
27	Exercise 3, Problem 3	Answer for iii) is not given. This answer should be as iii) q closed and p open.
28	Problem 10, vi)	This should be as (Those students who neither study Telugu, nor whose fathers are doctors)
29	Exercise-1, 1.xii	In this problem the word got should be dropped
37	Example 3, solution, first line	Here, 'OR' is to be replaced by 'and conversely'. Also the explanation for cases $x_1 \neq x_2$ and $f(x_1) = f(x_2)$ should be separated clearly.
39	Above example 1: If f is a function ... Example 1. Let the function ... We see that $f^{-1}(x) = \{2,3\}$ ...	In this sentence, delete the words 'from A to B' and 'from B to A'. In this 'be' to be added before the word defined and both lines should be on one line. Also the word 'adjacent is to replaced by 'following'. A and B should be indicated in the diagram. This paragraph is to be modified as 'we see that $f^{-1}\{x\} = \{2,3\}$ since both 2 and 3 have x as their images under f. The inverse image of z does not exist since no element of A is mapped to z'.

	Note (1) Note (3)
40	$f^{-1}(4)$, $f^{-1}(9)$, $f^{-1}(-2)$, $f^{-1}(q)$ We therefore have …
41	Second line Example 3, solution - third line Example 4, line 2 Find the rule … Example 4, solution - third line Example 5, solution - first two sentences Last but one line A → B Whenever 'f' exists appear
42	Second para, last sentence. This first figure Note:

	This should be modified as (1) To each element in the domain A of the function f there corresponds one and only one element in B. So f: A → B is a function. This should be as (3) No element of A is mapped under f to the element z of B and therefore no element in A is image of z under f^{-1}
	In these, brackets, () should be changed to { } In this sentence 'one' should be added before 'and only one'.
	'if' is to be dropped and consider from 'so' onwards as another sentence. The word defieed is to be corrected as 'defined' and also B is to be replaced by R. Here 'define' is to be replaced by 'defines'. Word 'Also' is to be prefixed to this line. Make as one sentence This should be as A → A Replace by 'f' is a function
	Here 'into' is to be replaced by 'to'. This figure is to be dropped as it is not proper. This note is to be modified as: If $f = \{(x,x)\|x \in R\}$ then f is an identity function. In this case $f^{-1} = \{(x,x)\|x \in R\}$ which is also the same identity function and so every identity function is its own inverse.

43	Since $y = f(x)$ so … as $f^{-1}(x) = \frac{x+5}{3}$	This should be re-written as since $y = f(x)$, so $x = f^{-1}(y)$, i.e. $f^{-1}(y) = x = \frac{y+5}{3}$ is a formula defining the inverse function f^{-1}. We usually use x for defining a function. We can write the above rule for the inverse function as $f^{-1}(x) = \frac{x+5}{3}$.
46	First line Composite function Suppose f is a mapping … into C, i.e. ∴ f(a) is … In this para fourth sentence In the above para, last sentence Note	This should be removed. Before this section number is to be indicated as 2.3. This line is to be rewritten as 'suppose f is a mapping from A into B, and g is a mapping from B into C, as shown in the figure'. 'to' is to be added after 'assigns'. Also 'to' is to be replaced by 'a' before g(f(a)). Also 'thus' onwards make as another sentence. 'Also' is to be prefixed in this sentence. Here replace codomain by range.
48	Note: In the …	In this line 'those' to be deleted.
50	Sixth line {a, f(a); a ∈ A} Thus if the … line that no	This is to be modified as {(a,f(a)):a ∈A} The words at the end of this line should be as 'line, that is no'.
51	Fifth line	'Each' is to be replaced by 'every' and 'is' is to be added after 'a'.

	Sixth line second sentence	This sentence to be modified as In the following functions, find the zeroes, if any.
53	Key concepts 2. 3. In the third line 4. Fifth line 6.	 Delete the word 'called' 'an' before x is to be deleted This line should re-written as f:A → B is onto if f(A), the range of f = B. This is to be re-written as If f: A→ B is a bijection then f^{-1} is also a bijection from B to A.
54	11	This should be as In general, fog ≠ gof
55	Exercise 4 5. 8(iii) Exercise 5; Problem 7	 This answer should be as {a,b}, {e}, does not exist, {c,d}, does not exist, {c,d}, {c,d,e}, {a,b,e} Here (iii) should be deleted. This answer should be as $x^6 - 6x^3 + 6$
57	Rational Integral function ?	_____.
58	Factor theorem Lines 7-14 Third line from bottom	f(x) = 0 should be replaced by f(a) = 0 These lines should be deleted. This line should be modified as 'in both cases, i.e. when n is odd and n is even. The converse is also true'.

59	Example 2	This example should be dropped.
	Example 3, solution	
	Second line	This line should be written as 'If (x-1) is to be a factor for f(x) then we should have f(1) = 0'.
	Fourth line	∴ is to be added in the beginning
	Fifth line	To be corrected as ∴ (x+1) to be a factor of f(x), so we should have
	Seventh line	To be corrected as '∴ -1+2-a+b = 0'
	Ninth line	'and' should be added in the beginning
	Tenth line	To be corrected as 'Adding (2) and (1)'.
60	Fourth line	'for' to be replaced by 'of'
	Fifth line	at the end of this line add 'as a quotient'
	Example 5, solution	at the end of this line 'is a factor of f(x)' is to be added
	Fifth line	
	Sixth line	at the end 'as quotient' is to be added
	Example 6, Solution	This should be corrected as f(-1) = a-b+c = 6 ----(3)
	Fourth line	
	Fifth line	(1) - (2) is to be replaced by (1) - (3)
	Last line	This line should be replaced by '∴ a=1, b=-3 and c=2'

61	Example 7, solution Example 8, solution In order to …	The entire solution should be modified as Let $f(x) = x^3 - 6x^2 + ax + b$ Because $x^3 - 6x^2 + ax + b$ is divisible by x^2-3x+2, it should also be divisible by factors of x^2-3x+2. We know that $x^2-3x+2 = (x-1)(x-2)$ $\therefore$ f(x) is divisible by both (x-1) and (x-2) $\therefore$ f(1) = 0 and f(2) = 0 Hence f(1) = a+b-5 = 0 and f(2) = 2a+b-16 = 0 Solving these we get a = 11, b = -6 This para should be deleted
62	Fourth line Nineth line … g(x). Hence The quotient is x^2+4x+4 Therefore (x+1), (x-1) are two factors of f(x) To divide f(x) by (x-1) and then by (x+1) We use systematic division method as follows	At the end of this line add 'and the remainder is 0' 'g(x). Hence' these words to be replaced by 'g(x), and so' This line should be modified as $\therefore$ The quotient is x^2+4x+4 and the remainder is 0. This to be modified as therefore (x+1) and (x-1) are two factors of f(x). These two lines should be combined.
63	Exercise 2, problem 4 v) vi) vii) viii) Problem 9 Problem 10	These to be dropped 'the' should be added before 'remainder' Add the following line Find the values of a, b and c.

	Example 1; Third line	+2 is to be replaced by +3.
65	Example 4, solution	The solution should be as follows Let the quadratic polynomial in x be ax^2+bx+c. Now if $f(x) = ax^2 + bx + c$ is divided by (x-1), the remainder will be $f(1) = a(1)^2 + b(1) + c = a + b + c$ and it is given as 11. $\therefore a + b + c = 11$ (1) Similarly, when f(x) is divided by (x-2), the remainder = $f(2) = a(2)^2 + b(2) + c = 4a + 2b + c$ and $\therefore 4a + 2b + c = 22$ (2) When f(x) is divided by x-3, the remainder = $f(3) = a(3)^2 + b(3) + c = 9a + 3b + c$ and $\therefore 9a + 3b + c = 37$ (3) Solving (1), (2) and (3) we get a = 2, b = 5 and c = 4 $\therefore$ The required polynomial = $2x^2 + 5x + 4$
66	Example 5, solution First three lines Fifth, sixth lines Eighth line 10^{th}, 11^{th} and 12^{th} lines Exercise-3 Problem 2	These lines should be modified as Let the common factor be x-k. So when f(x) is divided by x-k, the remainder = $f(x) = k^2 + 5k + p = 0$ Also when Q(x) is divided by x-k, the remainder = $Q(k) = k^2 + 3k + q = 0$ '$\therefore$' should be added before these lines At the end add the following ,we have Add '$\therefore$' infront of these lines In this problem, q is to be replaced by 9

	Last two lines	These should be corrected as when $x^n + y^n$ is divided by x+y, the remainder is $(-y)^n + (y)^n$ If $(-y)^n + (y)^n = 0$, then $x^n + y^n$ is divisible by x+y.
67	Fifth line Problem 7 We shall now turn our attention to …	This is to be rewritten as $\therefore$ $x^n + y^n$ is not divisible by x-y unless $x \neq 0$, $y = 0$ or $x = 0$, $y \neq 0$ To be included in the exercise involving binomial theorem. In this line, 'that lad to' is to be replaced by 'the solution of which involve'.
68	Line 8 Line 9 Line 10 The line before Exercise 4	In this line 'can't' is to be replaced by 'cannot' 'so' is to be added in front. 'and the' is to be added in front 'as' to be added after the opening paranthesis.
69	Problem 11 Graphical solution of quadratics First line Fourth line 8^{th} line from bottom	This is to be modified as The area of a rectangular room is 80 m^2. If the length and breadth are increased by 2 m, the area would be increased by 40 m^2. Find the original dimensions of the room. 'ae' after equations is to be corrected as 'are'. 'by' is to be deleted. 'got' to be deleted.

	5th line from bottom 2nd line from bottom Plot the points … until the end of the page	'suare' to be corrected as 'square' '∴' to be dropped This is to be rewritten as …
73	1-12 lines	These should be written as
74	7th line	'with' is to be replaced by 'by'
77	The line above the graph	'with' is to be replaced by 'by'
78	6th line 2nd line from above the graph	'Infact' is to be corrected as 'In fact' p should be capital in 'plot'.
79	First para 12th line Consider $y = ax^2$ ------(B) … upto 1. Solve graphically	This para is to be rewritten as 'From the graph of $y = x^2 - 4x + 5$, we notice that the curve never meets the x-axis. So there are no real roots of $x^2 - 4x + 5 = 0$' 'gelling' to be replaced by 'finding'. Also the title 'Alternate Graphical Method' to be incorporated before this line. These lines should be rewritten as indicated in the text.
80	4th line Last line	This is to be rewritten as The roots can be obtained algebraically as well. At the end of the line add the words 'for convenience'
82	Fifth line	This is to be modified as 'no real roots. Solving algebraically we get'.

	Eighth line	This line should be replaced by the following $= \frac{6 \pm \sqrt{-4}}{2}$, which shows that the equation has no real roots.
83	Quadratic Inequalities In one variable The first line	'In this section' should be added in front.
	9^{th} line	Here '$(x-r_1)$ is negative and $(x-r_2)$ is negative' is to be replaced by $x-r_1$ and $x-r_2$ are both negative.
	Fig.	'W' should be replaced by '∞' and '+' should be written between r_2 and ∞ above the line. 0 + ——— r_2
	The line above the figure	This line should be modified as Here the solutions of $ax^2 + bx + c = 0$ are real and unequal.
	Fourth line from the bottom	'real roots and' should be deleted.
84	Example 1, solution, 4^{th} line	This line should be deleted.
85	First para under 3.5	The last line in this para should be deleted.
	Last but one para	This para to be written as If p(n) is a statement such that i) p(1) is true

	Example 1	ii) p(k+1) is true when p(k) is true for $k \in N$ then p(n) is true for all $n \in N$ Before this example, simple example like Prove $1+2+3+\ldots+n = \frac{n(n+1)}{2}$ should be given.
86	Proof	In all the proofs, by induction, we should assume that the statement is true for some k (or r) and establishing for k+1.
87	A note of caution: Example 4 13th line from bottom 12th line from the bottom The para just before Exercise 7	This note is to be modified as A note of caution: In employing the principle of mathematical induction to prove the given statement, the steps (i), (ii) and (iii) are all necessary. This example should be dropped as it is not explained properly for method of induction. 'both the criteria' should be replaced by 'all the steps'. 'care of' to be written as 'care'. This para is to be dropped..
88	3.6 The binomial theorem	Entire discussion/problems/answers on binomial theorem should be deleted from the text as it requires the discussion on combinations.
94	Key concepts 8	To be dropped

	7.ii Problem 18, ii	This is to be modified as ii) true for k+1 when it is true for k The answer should be as -1/3, -2
95	Exercise 2 Problem 5 Exercise 3 Problem 8 Exercise 6 Problem 4 Problem 5	 Answer I = -5/2 Answers to be verified Answer should be as {x/-7<x<-3} Answer should be as {x:x>10} ∪ {x|x<1}
97	Exercise-1, 1 Second line Third line Fourth line and fifth lines Sixth line	 At the end of this line '∈X' should be added ',' should be inserted after 'that is' 'plate' should be replaced by 'region'. 'figures' should be replaced by 'regions'
98	Problem 2, v) vi) ix) and x) xiii)	 This should be as x = 0, (x,y) is a point on _____ axis This should be as For y = 0, (x,y) is a point on _____ axis 'it' is to be replaced by 'the axis'. This should be modified as

		The slope of the line y = mx + c is _____
	Problem 5, Seventh line from the bottom Third and second lines from the bottom	'State' is to be replaced by 'Indicate'. '(or profit function)' is to be dropped. 'Polygon' is to be replaced by 'polygonal region'.
99	The first two paras	These two paragraphs are to be replaced by a convex region may be a closed or an open region as shown below 
	Fifth line	'Example' should be written as 'Examples'. Also these examples should appear before the remark.
	Seventh line from the bottom	'is' should be inserted after 'constraints'. 'Polygon' should be replaced by 'region'. 'above' should be inserted before 'theorem'. '4.2.2' should be deleted;
	Third line from the bottom	'system (1)' should be replaced by 'above system'.
	First and second lines from the bottom	These should be written as The shaded region OABC in the above graph is a closed convex region. The vertices of this region are O(0,0), A(3,0), B(2,3) and C(0,5).
100	Fourth line	This line should be A(3,0), f = 2x3 + 3x0 = 6

	Seventh line Nineth line In case the solution set … In this para, first line and second line second line fourth line	'Vertx' should be corrected as 'vertex' 'an' should be replaced by 'a' 'Polygon' should be replaced by 'region' 'How ever' is a single word 'general' should be deleted 'general graphical' should be deleted
101	Sixth line Eighth line Ninth line Tenth line Eleventh line Twelth line Observe … for f. That is why … ISOPROFITLINE Fifth line from the bottom.	'as' is to be replaced by 'is' 'That is' to be dropped The first sentence should be modified as But this is not possible. At the end of this line, '(1) Let us' to be replaced by '(1), let us'. 'arbitary' should be dropped. Also 'print' should be inserted before 'for'. The sentence 'consider the line x+4y = 7 ---------- (2) should be shifted to the next line. This paragraph should be modified as Observe that every point on this line will give the same value, 7 for f. Any such line parallel to the line represented by f(x) = k is called an ISO PROFIT LINE because all the points on this line give the same profit. Add at the end 'with the convex region'.

	Last two lines	All the inequalities should be on one line.
102	Fig. 4.3 Below the figure, first line	'Wrongly shaded. To be corrected. Also Isoprofit Lines should be drawn. 'Open at the side AC' these words should be deleted.
103	Ninth line Tenth line Sixteenth line Before the last line	, should be after A , should be after B 'made' should be replaced by 'manufactured' The mathematical model should be clearly stated.
104	Seventh and eighth lines	'220' should be replaced by '200'.
107	Answers Exercise-2, Problem 2	 The answer should be as Max. value 20, occurs at the vertex (40/7,10/7)
108	Problem 7 Problem 8 first answer	One more line should be added as Also every point on the line joining (6,0) and (2,4) is a solution. This to be corrected as 'maximum value = 3 occurs at (4,1)'
109	Seventh line Eighth line 1. a^m = a.a.a…a, m factors 4 a^m, $a^n = a^{m+n}$	Bracket should be deleted. After that separate another sentence should be started. This line should be modified as Recall the following definitions Reduce the gap between m and factors Here ',' should be replaced by '.'

	5 ... $= \frac{1}{a^{n-m}}$, if 8 $(\frac{a}{b})^m = \frac{a^m}{b^m}$; $b \neq 0$	This should be modified as 5. $\frac{a^m}{a^n} = a^{m-n}$ Here, $b \neq 0$ is to be dropped.
110	Laws of rational indices. The first line For p to be a positive integrer, i.e. $p \in z$, Note In the box	 $p \neq 0$ should be dropped This should be deleted Delete this note Add the following $a^{p/q} = a^{p \times 1/q} = a^{1/q \times p} = (a^{1/q})^p$
111	Theorem proof	Either the proof is to be dropped orr to be given in other cases also.
112	Theorem proof	As above
113	Laws of rational indices Concept 7	Delete 'and n odd'.
114	Example 4, solution Last step	Here $a^{1/74/35}$ should be replaced by $\frac{1}{a^{74/35}}$
116	b) Long answer type Problem 2 Problem 3 Problem 6	 This problem should be dropped This problem should be corrected as If $a^x = b$, $by = c$, $c^z = a$, then show that $xyz = 1$ 'z' should be replaced by 2.

	Problem 9	Problem Below this should be indicated as 10.
117	Problem 13 Box	? Spelling of a 'absolute' should be corrected
119	Exercise 3 Problem 5 Problem 10 If a is positive real number, then $\|x\| \leq a \Leftrightarrow x \leq a$ or $-x \leq a$	 -4 should be replaced by 4 -7 should be replaced by 7 Here '$x \leq a$ or $-x \leq a$' should be replaced by 'x lies between -a and a'. Also the next two lines should be dropped.
120	Fig. 5.4 Exercise 5 Problems 2 and 12 Box second line Exercise 6 Problems 5, 7, 8, 13, 15 and 18	This is not according to the proper scale '-' sign on the right side of the equality should be dropped. Here 'a>0' should be dropped. Right side number should be positive.
121	Problem 10 5..2 Idea of some simple limits 5th line from the bottom	This should be corrected as $\|9-3x\| = 6$ This heading should be modified as '5.2 Idea of a limit' 'Polygon' should be inserted before 'circumscribed'
122	Fourth line 7th line from the bottom Example 3	(but not equal to zero) - These should be deleted. 'as' to be replaced by 'symbolically by writing'. The next sentence should be in the next paragraph '$\sum$' to be added in front of $\frac{1}{2^n}$
123	Third line	'The sum of the series becomes' should be replaced by 'the series is'

	Fourth line Example 4, solution Example 5, solution second line
124	Theorem, proof
125	Example 9, solution Note
129	Concept 13 Exercise 1, Answer (c) Answer 7 Exercise 2, Answers (a) Answer 9 (b) Exercise 4, Answers Answer 3
130	Answer 6 Answer 7

	This line should be modified (as 'Geometric series' concept was not discussed by now). 'approach' should be replaced by 'approaches' Also more explanation is needed. In this line, 'and hence the limit does not exist' should be dropped.
	Second sentence should be modified as 'the proof for other cases is beyond the scope of this book'.
	Some more explanation is needed In this note 'section' should be replaced by 'book'.
	This should be modified as $\|x\| \geq a \Rightarrow x \leq -a$ or $x \geq a$ Answer should be 4^{m-2} Answer should be 2^{m+mn+n} Answer is $x^{10/3}$ Answers 17 and 18 should be deleted Answer is $-\frac{2}{3} \leq x \leq 2$
	Answer is $-2 < x < 2$ Answer is $-12 \leq x \leq 13$

	Exercise 5, Answers Answer 2 Answer 7 Answer 12 Exercise 7, Answer Answer (b) 8	 The answer is $y < -10$ or $y > 10$ $5 \qquad 13$ Answer is $x \leq \frac{}{4}$ or $x \geq \frac{}{4}$ -9 Answer is $x < \frac{}{5}$ or $x > 3$ 5 Answer is $-\frac{}{3a^8}$
131	Second line Last paragraph	'ever' should be replaced by 'over' This paragraph should be rewritten as In other words an Arithmetic Progression is a sequence in which the difference of any two consecutive terms is a constant known as common difference. The common difference is denoted by 'd'. It is customary to take the difference as the term minus the previous term.
132	First paragraph (Quantities … and so on) Fifth line from the bottom Fourth line	If the successive terms of an A.P. are $t_1, t_2, \ldots, t_n$ then $d = t_2 - t_1 = t_3 - t_2 = \ldots = t_n - t_{n-1}$ or $t_2 = t_1 + d$, $t_3 = t_2 + d$, … Replace 'number of term in the series' by 'term number'. Above this line the following should be added. For example
134	Problem 17	This should be dropped as iut has no relevance here.

	Problem 20	This should be modified as In a series, if $t_1 = 1$ and $t_n = t_{n-1} + 3$ for $n \geq 2$ find the first five terms.
135	Ninth line from the bottom Seventh line from the bottom Fourth and fifth lines	'natural numbers. Then' is to be replaced by 'terms of the A.P. Then' Insert 'in reverse order' after 'rewriting' These to be modified as the corresponding term in (2) is $2a + (n-1)d$. How many times will we get $2a + (n-1)d$ in the addition of (1) and (2). It is clear ...
138	First and second lines Example 14, solution = 6 x 1097.50 = 6585 Rs Seventh line from the bottom Fifth line from the bottom	At the end of these lines ',...' should be added to represent the continuation 'principle' should be replaced by 'principal' Here 'Rs' should be deleted. 'between' should be replaced by 'of' Add the following sentence at the end of this line. Such inserted terms are known as arithmetic means between those quantities.
139	Problem 17	This problem to be rewarded as If the sum of first n terms is $2n+3n^2$, find the rth term.
140	Last line	Here 'series is =' is to be replaced by 'A.P. is' Also this line should be in continuation of the previous line.
141	Problem 5	Here 'in' is to be replaced by 'is'.

	Last line	Last term should be as $(- \frac{1}{3})^n$
142	Tenth line Thirteenth line and so on This is a G.P. $t_r = rt_{r-1}$ $(r \neq 0)$ i.e. $\frac{t_r}{t_{r-1}} = r$ (constant)	'except the' should be dropped as they appear twice. Here 'series' should be replaced by 'sequence'. Also in this paragraph 'non-zero' should be added in the beginning of the second line. Also add the phrase $(a \neq 0)$ at the end of this paragraph. This should be written as This is a G.P. in which $t_n = rt_{n-1}$ $(r \neq 0)$ This should be corrected as $\frac{t_n}{t_{n-1}} = r$ (constant)
143	Example 2	Remove the word 'following'
145	Third line from the bottom Second line from the bottom Last line from the bottom	At the end of this line the following should be added (Note that we consider here the geometric mean of positive numbers only) '(a and c are positive)' This should be deleted p, q should be replaced by a and c.
146	First line Example 8, End of the solution	'What' should be replaced by 'find'. 'desired' should be inserted between 'The' and 'geometric'
147	(2) - (1) = $S_n - rS_n$	This should be written as (1) - (2) gives $S_n - rS_n$

	11th line from the bottom $l_r - a$ 10th line … ------- r-1
148	Example 10, solution 4th line Example 11 Example 11, solution
150	Last line Second line from the bottom
153	First line Third line Example 17, solution Eighth line from the bottom
154	Exercise-6, problem 10

	S_r should be replaced by S_n Also in the brackets 'r' is to be replaced by n This should be as ... $S_n = \frac{l_r - a}{r-1}$
	The following should be added in the beginning of the solution 'Observe that the given terms are in G.P. In $\frac{3(2^8-1)}{2-1} = 3(2^7 - 1)$, 7 should be replaced by 8. In the first line 'to' should be replaced by 'of'. Second line 'Thus, if a> 1' should be dropped. In the third line, 'for convenience sake' should be incorporated after 'If a > 1'
	$x = \pm 1$ should be written as $x \neq \pm 1$ Replace 'we have' by consider
	'Since' should be replaced by 'If' 'decreasing' should be dropped and 'where $\|r\| < 1$' should be incorporated after 'G.P.' 'It is sum' should be replaced by 'It is the sum'.
	This should be corrected as $223.\overline{983}$

155	Example 21	This question should be rewritten as If a, b, c are three consecutive terms of an A.P. then prove that K^a, K^b, and K^c are three consecutive terms of a G.P. where K is positive
156	4^{th} line 7^{th} and 8^{th} line 13^{th} line 5^{th} line from the bottom	'Example' word should be dropped This entire sentence should be dropped At the end of this sentence, 'between a, b, c' should be added $(\sqrt{ab})$ should be as $(\sqrt{ab})^2$
157	Review Exercise Prob. 1, 2, 4, 5, 17, 18	In all these problems 'is' to be added at the end of the stem.
158	Problem 16	The stem should be written as 'The sum to n terms of 1, 8, 27, 64, ... is'
159	Problem 21 Problem 22 II complete the following statements	The stem should be written as 'The sum to n terms of 1, 4, 9, 16, ... is' The stem should be written as 'The sum to 5 terms of 1.2+2.3+3.4+... is' For all these problem answers are not given.
160	Problems 20, 23 Short answer questions: Progressions	'II' should be added in the beginning Before this heading 'III' should be added
161	Problem 27 Essay type question: Progressions	This should be written as In an A.P. if $t_1 = 8$ and $t_n = t_{n-1} + 5$ $(n \geq 2)$ then find the first six terms Before this heading 'IV' should be added

162	Problem 6	This should be re-written as If a,b,c are three consecutive terms of an A.P. so that $a+b+c = 15$ and $a^2 + c^2 = 58$ find a, b, c.
	Problem 7 nterms	Gap should be between 'n' and 'terms'
	Problem 12	This problem should be written as Write the fractional form of $0.\overline{423}$
	Problem 11	This should be corrected as Prove that $\sum p(Q-R) = 0$ where P, Q and R are the pth, qth and rth terms of an A.P.
	Problem 15	'of' should be added after 'terms'. This problem should be rewarded as
	Problem 18	In a G.P., the first term is 5, the common ratio is 3 and the sum of n terms is 605. Find n.
	Some more interesting questions	This should be as V. Some more questions.
	Problem 3	Second sentence should be modified as Then the sum of the first one hundred terms of the progression $(a_1+b_1), (a_2+b_2), \ldots$ is Also the last alternative should be dropped
163	Key concepts	After this line the following words should be added Arithemetic progression
	Concept 2	'I' should be proper in second line

164	Concept 5	'independent of 'n'' is to be replaced by 'is constant'
	Concept 7	This should be modified as If three numbers are in G.P., then we can write them as $\frac{a}{r}$, a, ar
	Concept 8	This should be modified as If four numbers are in G.P., then we can write them as $\frac{a}{r^3}$, $\frac{a}{r}$, ar, ar^3
	Harmonic Progression Concept 1	This to re-written as The reciprocals of the terms of an A.P. form a H.P.
	Concept 2	This should be modified as If a, a+d, a+2d, … are in A.P. then t_n of the corresponding H.P. is $\frac{1}{a + (n-1)d}$
	Concept 4	'independent of n' should be replaced by 'a constant'
165	Exercise 1, Answer 11	This answer should be as 0, 9-n
	Answer 17	This should be dropped as it was suggested to drop the corresponding problem

	Answer 23	The last answer should be 2a + (n-1) 2d instead of 4a + (n-1) 2d
	Answer 26	The second answer should be as 5r - 18
	Answer 27	The second answer should be as (n-3) q - (n-4) p
	Answer 30	The answer should be '20'
166	Exercise 3; iii)	The answer should be $\frac{n}{3}[4n^2 + 12n + 11]$
	iv)	The answer should be $\frac{2n}{3}[2n^2 + 9n + 13]$
	v)	The answer should be $\frac{n}{4}[n^3 + 10n^2 + 35n + 50]$
	vi)	The answer should be $\frac{n}{4}[n^3 + 22n^2 + 179n + 638]$
	Exercise 3	The answer to problem 3 is not given. The answer is $\frac{n}{12}[n^3 + 4n^2 + 5n + 2]$, 1210

	Exercise 4 Answer 1	The answer should be $-\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \frac{1}{81}, -\frac{1}{243}$
	Answer 7	The answer should be $128(-\frac{3}{4})^{10}$; $(-1)^{n-1}\ 128(\frac{3}{4})^{n-1}$
	Exercise 5 Answer 11	The answer should be $\frac{3}{4}, -1, \frac{4}{3}, -\frac{16}{9}, \ldots$ or $\frac{4}{3}, -1, \frac{3}{4}, -\frac{9}{16}, \ldots$
167	Exercise 6 Answer 4	Both answers should be in decimals
	Answer 6	As above
	Answer 8	Answer should $\frac{114}{99}$
	Answer 13	Answer is 16
	Exercise 7 Answer 1	Answer should be 2 and 4

	Review Exercise	'I' should be added in the beginning All answers should be in small case Also answers to the remaining questions should be given
168	Fourth para last line Review Exercise 1. 1, 2, 7	'shadow' at the beginning of the line should be deleted In all these problems 'The' should be dropped
169	Figures (c) and (d) in 7.1	These should be drawn properly with equal corresponding angles.
170	Fig. 7.2 4th line 10th line 8th line from the bottom Box	As indicated in the previous paragraph the sides of the corresponding figures are not proportional. Figures should be drawn properly. Delete word 'correspondent' The spelling of 'holds' should be corrected 'Definition:' and conditions before the box are to be deleted The box should also contain the statement of the theorem. This practice should be in all cases of this type.
171	Fig. 7.3 Alternate proof	Figures should be drawn properly so that $\angle DFE = 90^\circ$ This proof along with the note on the next page should be dropped as it is incomplete.
172	5th line from the bottom	Spelling of 'line' should be corrected
174	Second line 8th line	From this line '(by basic proportionality theorem)' should be shifted to end of the next line AD should be written as AX

	11th line	'to' to be inserted before XA
	4th and 3rd lines from the bottom	In these lines 'corr ∠ s' and 'alt ∠ s' should be deleted
175	Example 7.1 Solution, first sentence	This sentence should be modified as we draw a ray AC making a small angle with the given segment AB
	Solution - Draw a perpendicular from A_5 to AD meeting AD at B	This line should be replaced by 'Join A_5 and B'.
	Fig. 7.6(a)	Draw the figure according to the modified explanation
	Example 7.2 Solution	In the beginning of this solution, proper explanation of the statement and significance of the ratio should be explained
177	Figures	Case ii, case iii should be written properly under the corresponding triangles
	Fifth line from the bottom	BC AC ---- should be replaced by ---- EF DF
	Fourth line from the bottom	AC BC ---- should be replaced by ----- DF EF
178	Corollary (A.A similarity):	The statement of this corollary should be modified as If two angles of one triangle are equal to the corresponding angles of another triangle, then the two triangles are similar.
179	Lines 3 to 6	These should be dropped
180	Example 2, solution Given	This sentence should be corrected as Let ABC be the triangle in which B is the right angle.

	Last line
181	Example 3, solution
182	Sixth line
183	Theorem 7.6, statement
184	Larger figure
186	Third line $<$ 7^{th} line from the bottom 8^{th} line from the bottom 5^{th} line from the bottom 3^{rd} line from the bottom
187	First line Second line Third line
189	Key concepts 4

∠C = ∠C should be replaced by ∠BCD = ∠ACB
In this example, the word 'ar' should be added everywhere A ABC --------- appears A PQR 'corollary' should be replaced by '-' similarity
'of the squares' appearing second time should be deleted.
All the angles as shown in bottom should be indicated.
This symbol should be replaced by This line should be deleted At the end of this line the following words should be added ; one angle may be obtuse and the other acute. Say ∠ ADB is obtuse. In this line 5 should be replaced by 4 In this line 6 should be replaced by 5
'Find' should be replaced by 'Represent' This line should be modified as on a real line In the beginning of this line the word 'Solution' should be added
'must' is to be replaced by 'is'

190	Review Exercise, 1 (i) 1 (v)	'that can be' inserted after the 'circles' This problem is to be replaced by If an arc subtends an angle of 60° at the centre, then the same are subtends an angle of ___ at any point on the remaining point of the circle.
193	Problem 9	In this problem the 'circumference' is to be replaced by 'circumcircle' and also the angles ∠x, ∠y and ∠z are to be indicated by ∠yxz, ∠xyz and ∠yzx respectively
194	Fifth and sixth line Problem 13 i) ii)	'arc' should be added before ARP and ASQ. 'the' should be added before 'circle'. ∠BPC should be written as simply BPC
195	After the line 7.2 tangent to a circle First line above the definition Definition	'Tangent' in the beginning should be dropped The words '(or two coincident points)' should dropped The second sentence should be dropped
196	9th line Theorem 7.8, Given Proof: Second sentence in the brackets	'second' should be replaced by Q add ',P' at the end and before the point. This sentence should be dropped
197	First proof. Last line (before note) Note Alternate and Alternative	This line should be replaced by This implies that OP ⊥ AB This note is not required Uniformly these words should be used

	Theorem 7.9, Given	This statement should be modified as The line XAY is perpendicular to the radius OA of C(0,r).
198	First proof. 7th line	'.:.' should be deleted
	Fig. 7.39(a)	The position of this figure should be shifted to the appropriate place
	The line above the Theorem 7.10	'forms' should be written as 'from S'
	Theorem 7.10, Given	In C(0,r) the '0' should be in upper case
199	Second line	In this line the second sentence should be deleted
	Theorem 7.11, statement	The meaning of the rectangle should be explained
	4th line from the bottom	This line should be dropped.
	3rd line from the bottom	Here, In AAA similarity one A should be dropped
200	Fifth line	BPD should be replaced by PBD. Also '(same angles)' should be dropped
	Construction	This statement should be modified as Draw perpendiculars OL and OM on AB and CD respectively. Draw OP and OA.
201	Fourth line from the bottom	(ii) $\angle ADB = \angle BAP$ This step should be written as (ii) $\angle BAP = \angle ADB$
	Theorem 7.13 statement, first line	'Through' spelling should be corrected
202	Fourth line	ACB, should be written as $\angle ACB$ Also '_____(1)' should be dropped

	Proof of 7.13 Construction in Theorem 7.14	everywhere ∠BDA should be replaced by ∠ADB in this proof 'If PAQ is not a tangent' – These words should be dropped
203	Fig. (iii) Paragraph above the Theorem 7.15 second line	'Do no' should be corrected as 'Do not' 'and this can be' should be inserted between 'other' and 'in'
205	First para Second para, the first and second sentences Fig. 7.51(b) fifth one	This to be replaced by A line touching two circles is called a common tangent to these circles. For example, Fig. 7.51(c), 7.5(d), 7.52 These two sentences should be modified as If a line touches one circle at a point (say P), and other circle at a point (say Q), then the length PQ is called the length of the common tangent. Here R + r = d should be corrected as R + r < d
206	First sentence Case I second line Last para Example 1	This sentence should be modified as From the above figures it can be seen that common tangetns to two circles will exist only when neither of them lies entirely inside the other. 'internally' should be replaced by 'externally'. This para should be modified as If the circles touch internally, t hen there will be only one common tangent and will be direct common tangent. This example should have been given after the Theorem 7.10

207	Example 2 Examples 3, 4, 5
208	Example 4, Proof Similarly points R, O, N are collinear $\therefore \Delta$ OLN is isosceles and … $\therefore OL^2 = OM^2 + LN^2$ Proof: last line $r = \frac{x}{r} = \frac{l}{6}$ AB
209	Third line from the end of the proof Answers to be checked
219	4th and 7th lines
220	2nd line from the bottom
221	First line Proof
222	8th line 10th line

	This example should have been given after Theorem 7.8 All these examples should be placed in the appropriate places Also no relevant example for common tangent is given
	Here 'N' should be replaced by 'M' This sentence should modified as Δ OLN is isosceles and M is mid point of base LN and therefore OM is perpendicular to LN This should be corrected as $\therefore OL^2 = OM^2 + LM^2$ This should be corrected as $\frac{x}{6} = \frac{1}{6}$ AB
	This should be justified by writing as Finally BQ = QP because they are the lengths of the tangents drawn from the external point Q to the circle
	Delete C'(M, ½ OO')
	'<' sign should be replaced by '='
	The word 'construction' should be replaced by 'construct' Here AC should be equal to 4 cm
	'(Construction in previous class IX)' These words should be dropped A'B'C' should be as A'BC''

	14th line	B'C should be replaced by BC'
	Construction 7.26, Solution (i)	The words 'the line segment AC' should be replaced by 'it'. The words in the brackets should also be dropped.
	Example 11, first line	Here 'side' should be replaced by 'sides'
223	Construction 7.27	Second sentence should be separated from the first and shift to another paragraph
	Fig. 7.85	E on the right side should be dropped C, C', E' also should be indicated in the figure
224	At the end of the proof	Equality of the corresponding angles should also be shown
225	$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{difference of y coordinates}}{\text{difference of x coordinates}}$	Here $\frac{\text{difference of y coordinates}}{\text{difference of x coordinates}}$ should be dropped
	4.	This line should be modified $y = mx + c$ is the equation of a line with slope m and with y intercept c (slope intercept formula)
	5.	'defined' spelling should be corrected
	6.	This statement should be modified as Two (non-vertical) straight lines are parallel if and only if they have the same slope. $Y = mx + c_1$ and $y = mx + c_2$ represent two parallel lines with slope m.
	7.	This statement should be dropped

	8.	This statement should be modified as Two lines are perpendicular when the product of their slopes equal to -1
226	10	Drop this statement
227	8th line from the bottom	'm+n ≠ 0' This should be dropped.
228	Fig. 8.1 First line Second line Case (b) 3rd line from the bottom	The corresponding angles in the ΔPRS and ΔRQT should be indicated clearly to make use of these to show similar triangles. QRT should be replaced by RQT LN should be replaced by MN Figure should be drawn Instead of m ≠ n, it should be m > n
229	10th line Before the Note Example 2 Last line	Instead P, Q it should be R, Q Before this note the following lines may be added. Students are advised to derive the coordinates of R in the case of m < n After R(4,24), the following words should be added 'on the line PQ' This line should be modified as 'The Point R is (19/2, 21)'
232	Second box The para just before the second box	This should be dropped The last sentence in this para should be dropped
233	First line	Instead of 'the' before 'triangle', it should be 'a'.

	5th line	Instead of $\frac{-8+7-q}{3}$, it should be $\frac{-8+7+q}{3}$
	Example 2, solution	Area of the triangle should be calculated
	12th line from the bottom	'by hypothesis' should be dropped
235	The box and the matter above this	All these should be dropped as it is known
236	$\therefore$ Equation of L' is $y-y_2 = \frac{-1}{m}(x-x_2)$	This line should come before the above para starting with 'observe ...'
237	Before the box	The case $a \neq 0$, $b \neq 0$ and $c = 0$ should also be discussed
240	KEY CONCEPTS	Here mention FORMULAE also
	Concept 6	This should be dropped
	Concept 3	Here $(m \neq n)$ should be replaced by $(m > n)$
241	Concept 7 and all the cases	All these should be dropped
	Concept 8	Here 'said to be' should be dropped
	Concept 9	Here 'always' should be dropped
242	Exercise 3 1 (a)	This answer should be 25 sq units
	(b)	This answer should be 15 sq units
	6(a)	This answer should be 96 sq units

	Exercise 4 2 (iii) 8. (b) 1. 5. 10 ii)
243	Exercise-1 (1) A line … (2) A portion of a line … (3) A join or intersection … (8) … the angle turned as _____
244	10th line from the bottom
245	Line 6-8

This answer should be slope $\frac{2}{7}$ and y intercept is $\frac{12}{7}$

The answer should be $2y - 7x = 6$

The answer should be given $8x - 10y = 25$

The answer should be 19.6 sq units

The correct answer is $3x + 5y + 19 = 0$

This should be modified as
(1) A line is a set of _____ in a plane

This should be modified as
(2) A portion of a line on one side of a point on it, including the point is known as ___

This should be as
(3) A union of two rays having a common initial point gives _____. The common end of the rays forming an angle is called _____ of the angle. The rays that form the angle are called the _____ of the angle.

Here 'turned' may be replaced by 'formed'.

This line should be changed as
1 complete angle = 360° (degrees)

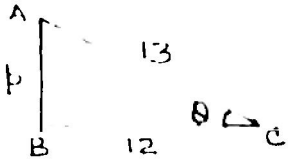
This sentence should be modified as
The angle subtended by the arc at the centre of the circle is called as radian

	Before the box	The following line should be added at the end of the paragraph. Note that radian is not dependent on the radius of the circle
	16th line from the bottom We know that if r is the radius of the circle ...	Here 'the' in front of circle should be changed as 'a'
	8th line from the bottom	This sentence should be modified as The central angle of a unit circle which intercepts an arc of length unit is called one radian
	2nd line from bottom	Second sentence should be deleted and 'an' should be added before 'angle'
	Last line	This should be rewritten as 2. Wherever the measure of an angle is given as a real number without mentioning the degrees, it is considered to be radians
246	4th opoint	This should be dropped
	5th point	This point should be considered as 4
	Last two lines	'g' should appear as superscript of the corresponding number
247	Second line	'lenght' should be corrected as 'length'
	Fourth line	In 'r0 cms' 'cms' should be dropped
	Exercise-2 Problems 1, 2, 3, 4, 9, 10, 11, 12, 13	These problems should be dropped or should be shifted to the review exercise-1 on page 243

	15^{th} problem	This problem should be dropped
248	Fifth line consider two cartesian coordinate ... 16^{th} line 17^{th} line ... follows Fifth line from the bottom	Here 'two cartesian' should be replaced by 'the' Here Δ PON should be written as ΔPNO Here the word 'follows' should be dropped The word 'briefly' should be written in place of 'briefIt'
249	1 sixth line ---------- cosec 0 Seventh line 8^{th} line Point 3	1 Here - ----- should be written as cosec 0 cosec 0 In this line 'called' should be deleted Here 'cots' should be replaced by 'cot 0' Explanation for this should be included
250	(i) Example under first point Fifteenth line. Then ... Fifth line from the bottom Last two lines	This point should be dropped. There is no need of saying the ratios are real numbers as mentioned in these pages Here 'function' is to be replaced by 'ratio' Also use 'trigonometric ratios' throughout instead of 'Trigonometric functions' This sentence should be dropped In this line, the words 'it is denoted with the symble ∞' should be dropped. Also the word 'As' should be dropped. As above

251	Fig. 9.8	The value a$\sqrt{3}$ should be nearer to the perpendicular line
	Thirteenth line ΔABD	This should be as ΔADB
	Fifth line from the bottom … $\frac{AB}{AD} = \frac{\sqrt{3}}{2}$	This should be as … $\frac{AB}{AD} = \frac{2}{\sqrt{3}}$
	Fourth line from the bottom	This should be dropped
252	End of the fourth line	The following line should be added 'consider the ΔABC'
	Eleventh line from the bottom	The spelling of 'overlaps' should be corrected
	Tenth and nineth lines from the bottom coordinates of p…	These lines should be dropped
	Sixth line from the bottom	The matter in the brackets should be replaced by 'wherever we come across something, we say that 'it is undefined'
253	First two lines	These lines should be replaced by The above trigonometric ratios can be shown as in the following table
	Table	The first column entries should be written in the second column using the equality sign and first column should be delted The '∞' should be replaced by ' '
	Activity	This activity should be dropped

	Ninth line from the bottom Fifth line from the bottom Fig. 9.11
254	Example 2, first line Sixteenth line ... = AC Second line from the bottom
255	Note: Fifth line from the bottom Example 6
256	Problem No. 7
257	Problem No. 9

	The words '$\angle A$ is acute' are to be dropped This line should be modified as If BC = 5, then AB = 12 as shown in Fig. 9.11 This figure should be drawn according to the proportion of the sides
	Delete the words 'without using tables' Here second = AC' should be dropped This sentence should be modified as The above results (i) and (ii) are true for any values of A and B. Similar results are true for sin(A–B), cos(A–B), tan(A–B) and tan(A+B) for any A and B. We assume the following six results without proof This note may be modified as These results are true for any value of A. We assume these three results wihtout proof This should be dropped from here
	The figure should be as follows 
	This problem should be rewarded as Given A = 45°, B = 30° find tan(A–B)

	Problem No. (b) 11	This problem is not given. Other problems should re-numbered
258	Lines 2 to 13 14^{th} line 9.3 Trigonometric identities 6^{th} line from the bottom 5^{th} line	Delete all these lines except 8^{th} line Delete 'we now' This section should be interchanged with 9.2 AC^2 Before this line the following should be added = ----- = 1 AC^2 Also replace 'But' by 'Since' At the end of this line the following should be added Consequently, a) $\cos^2\theta = 1 - \sin^2\theta$ b) $\sin^2\theta = 1 - \cos^2\theta$
259	Note Example 1	In this note add the following points 3. Eventhough the identities have been proved for an acute angle θ, the identities are valid for all θ 4. All trigonometric ratios are positive when θ is acute This should be modified as If $\sin\theta = \frac{3}{5}$, find $\tan\theta$ using trigonometric identities when θ is acute
260	Example 3, 4	In these eamples there is no need of writing $0° < \theta < 90°$ as we are dealing with identities
261	Last line	After this line add the following line Hence $x^2 + y^2 = a^2 + b^2$
262	First line	'Trigonometric' instead of 'trigometrical'

263	Problem 13	This should be modified as $\cos 2\theta - 3\cos^2\theta + 2$ Show that ---------- = 1 $\sin^2\theta$
	Problem 14	This should be modified as $\frac{\cos\theta}{1-\sin\theta} + \frac{\cos\theta}{1+\sin\theta} = 2\sec\theta$
	Problem 15	This should be corrected as $\frac{\cos\theta}{1+\operatorname{cosec}\theta} + \frac{\cos\theta}{\operatorname{cosec}\theta - 1} = 2\tan\theta$
264	Problem 20	Drop this problem
	12th line	At the end of this line the following should be added $= \cos\theta$
	Last box	The limits of θ in this box should be modified as $0° < \theta < 90°$
265	Table	In this table, ϕ should be replaced by $(90 - \theta)$ Note, below this table should be dropped Also drop the words 'denoted by ∞' from the table
	Trigonometric ratios of (-θ), for all values of θ	The explanation should be modified as follows Let the coordinates of P be (x,y) so that the coordinates of

		P′ are (x,-y) as indicated in the figure From the figure 9.19, $\sin(-\theta) = \frac{NP'}{OP'} = \frac{-y}{OP} = -\frac{y}{OP} = -\sin\theta$ Similarly $\cos(-\theta) = \cos\theta$ $\tan(-\theta) = -\tan\theta$ $\cot(-\theta) = -\cot\theta$ $\operatorname{cosec}(-\theta) = -\operatorname{cosec}\theta$ $\sec(-\theta) = \sec\theta$ In the figure, indicate the foot of the perpendicular by N and also the coordinates of P and P′ as (x,y) and (x,-y) respectively
266	Example 1	The derivation should be based on the trigonometric ratios of the sum of the angles say sin(A+B)
267	Example 4 3rd line from the bottom	This example should be modified as Find the length of the side of a regular hexagon 'inscribed in a circle of radius 1 mt As mentioned here, tables should be provided at the end of this chapter
268	Example 1	In these type of examples, '.' should not be put before the minutes Before this example, one more example where the mean difference is not involved may be given. The explanation for this problem should be modified suitably Also all the values in the selected row should be given in all the tables
269	Fig. 9.22(a)	Indicate the foot of the perpendicular by X

	13th line from the bottom	This line should be corrected as = 0.2610
	12th line from the bottom	This line should be corrected as Length of a side = 0.261 m = 26.1 cm
	Problem 5	The word 'sign' should be corrected as 'sine' In this page, all angles should be indicated by using the symbol '0'.
271	Third line	Answer should be deleted from this line
	Eighth line	Drop the word 'like'
	Last line	This line should be modified as We shall now illustrate the application of this concept through few problems
272	Last line	This line should be dropped
274	First line	Before this line the following should be added $\text{From } \Delta ADC,\ \tan 60^\circ = \frac{AC}{AD} = \frac{AC}{40} \Rightarrow AC = 40 \tan 60^\circ$ $= 40\sqrt{3}$ (i)
	Second line	At the end write (ii)
	Third line	Before this line add the following words $\therefore$ From (i) and (ii)
	Sixteenth line (line before exercise)	This line should be dropped.

	Problem 5
275	Problem No. 1 in Exercise-7 Problem No. 2 Problem 3 second line Problem 5 Problem 10 Key concepts 1. Concept 2

This should be modified as
The angle of depression from the top of a tree of a point is 60°. If the point is 100 mts away from the foot of the tree, find the height of the tree

One 'the' should be dropped

The word 'apart' should be added at the end of the first sentence

Remove 'on a' after 'building' and include '.'

In 'the river', 'the' should changd as 'a'
Also drop the word 'approximately'

Put '?' at the end

This concept should be modified as

1. Trigonometry is the branch of mathematics wehre relations between the sides and angles of a Δ^{le} are discussed.

After this
The following concept should be inserted.
Conversion Factors

From	To	Multiplying factors
D	G	100/90
G	D	90/100
D	R	π/180
R	D	180/π
G	R	π/200
R	G	200/π

	Concept 3 Concept 5 Table 7	Correct the word 'trigonometric' The first line should be modified as trigonometric ratios of $90° - \theta$ and $90° + \theta$ Trig ratio/angle should be properly indicated. Also drop the words in the last cell and put _____ After this concept insert the following concept $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$ $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$ $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$
277	Exercise 3(a) Problem 12 3(b) Problem 2 Problem 3(b) 10 11	The answer should be corrected as $\cos 2\theta = \frac{1 - \tan^2\theta}{1 + \tan^2\theta}$ Answer should be corrected as $\frac{7}{17}$ Answer should be $\frac{\pi}{12}$ This answer along with the question number should be dropped _____
278	Exercise 5 Problem 8 Exercise 6(a) Problem 1(ii)	Answer should be - ½ Answer should be 4.6544

	Problem 3(ii) (v) Problem 6 6(b) Problem 2i 2ii Problem 4	Answer should be 10.6119 The question is not existing This answer should be 0.8586 The answer is 0.7624 The answer is 1.6448 The answer is 3.125 sq units
279	Choose the correct ... Review exercise Problem 2	Here 'I' should be added in the beginning This should be modified as If 1-10, 11-20, 21-30, ... are the classes, then lower limit of the class 11-20 is
280	Problem 10 Mean of the ungrouped data The Arithmetic mean of a ... $\frac{\sum x}{n}$ or briefly ---- ---------- (1) Note	In the second blank 'greater than' should be written as a part of the question This title should be dropped This definition should be modified as The Artihmetic Mean (AM) of the given values is defined as the quotient of the sum of the values and the number of values This line should be written as $\frac{\sum x}{n}$ simply ---------- (1) This note should be dropped

	$\therefore$	This symbol should be deleted
282	Using the symbol Σ for summation we get 6th line Last column of the second table After the second table $\bar{x} = \frac{\Sigma fx}{N} = \frac{1020}{40} = 25.5$	This should be replaced by 'or' 'n' should be replaced by 'N' The total should be $\Sigma f(x) = 1030$ $\frac{1030}{40} = 25.75$ 5 should be added at the end of this 'Example' word
283	First line after the first table Second table Third column	'n' should be replaced by 'N' Also 'n' should be replaced by 'N' everywhere Also 'K' should be replaced by 'k' Here '(a)' should be replaced by '(A)'
285	Problem 3, 9	'is' should be replaced by 'are'
286	Merits and Demerits Last line	These should be discussed at the end of this unit 's' shoud be dropped in 'informations'
287	Second line	'and in some cases ... distort it' These words should be dropped
288	Median from ungrouped data 19th line from the bottom 12th line from the bottom 4th line from the bottom	In this title 'from' should be replaced by 'of' 'central' should be added before 'tendency' 'MEDIAN' should be replaced by Median 'be' before median is to be replaced by 'the'. Also 'for' to be inserted before 'definiteness'

289	Second line above the table	'n' should be replaced by 'N' wherever it occurs in this page and subsequent pages This line should be modified as C = length of the median class
292	Problem 5	'is' to be replaced by 'are'
293	First paragraph (b) (c) (a), (b) and (c)	This paragraph should be modified as If an observation occurs more frequently in the data, then the value of that observation is called the mode of the data. It is denoted by The second line of this should be corrected as '7 and 6 are the modes' Last two lines should be combined In all these, 'For a data' to be replaced by 'For the data'
296	First line Review Exercise	'Emperical' should be replaced by 'Approximate' Information about the year of examination should not be indicated
297	Problem 6, second sentence	This sentence should be corrected as 'Find the correct mean'
298	Problem 3 Key concepts, concept 2 and 4 Concept 4	'in' should be deleted 'n' should be replaced by 'N' The second sentence should be modified as F is the cumulative frequency of the class preceeding the median class, f is the frequency of the median class and C is the length of the median class

	Concept 9	'Emperical' should be replaced by 'Approximate'
299	Answers Review Exercise I (1) (4) (8) (ii) Answer (ii) Exercise 1, Answer for (3) (16) Exercise 2, Answer (5) (10) Exercise 3, Answer 1 (b) Exercise 4, Answer (2) (3)	'i' should be replaced by 'I' Answer is b Answer is c Answer is d (ii) should be replaced by 'II' Answers should be 'lower, ascending' This answer should be 342 --- 7 The answer should be given as (16) 9 The answer is 43.12 Delete this answer alongwith problem number The answer is 28 This answer should be 27, 31 This answer should be 63.9
300	Exercise-1 1(ii)	Insert the word 'number of' between by and columns
301	1 (xviii)	This problem should be modified as If AB = 0, then it need not be that A = _____ or B = _____

302	First line	The word 'before' should be replaced by 'after'
	Problem No. 6	The words 'then p and x are' should be deleted
	No. 7	The (d) option should be changed to 'additive inverse of A'
	Problem No. 5	The sub-questions under this problems should be in Roman
	No. 6, 7, 8	These should be shifted to left
303	Sixth line from the bottom	The words 'and any finite number of columns' should be dropped
305	Third line. The sentence Number of B = 1	This sentence should be changed to 'Number of rows in B = 3'
	Example 2, solution	The words 'are feasible and we can find both' in the starting line should be dropped
306	Second line	This line should be modified as Here order of P is (2x2)
	Third and fourth lines	In these lines interchange the words 'columns' and 'rows'
	Sixth line from the bottom	The word 'here' should be added at the end of this line
308	(b) Essay type	Here 'Essay' should be replaced by 'Long answer'
310	First line	Replace the words 'If we observe the pattern in the (2x2) matrices', by 'From the above example'
	Before the box	The following line should be added 'observing $\begin{vmatrix} 2 & 3 \\ 5 & 1 \end{vmatrix} = -13$'

	Second line from the bottom In example 4, note that $\frac{1}{K} = \frac{-1}{13} \Rightarrow K = -13$	After this insert the following $= \lvert A \rvert$
311	Definition in the box	The matter in the box should be modified as follows For a non-singular square matrix A, the matrix B such that AB = BA = I is called the multiplicative inverse of A. Singular matrices do not have multiplicative inverse
312	Line No. 9 Short answer type Problem 2	In this line after '(-1)' insert the following (Change or reverse the sign of the other two-elements) This problem should be modified as If the matrix $A = \begin{pmatrix} p & q \\ r & s \end{pmatrix}$ is to be singular then ps = _____
313	Problem 7	At the end, '=A' should be replaced by '= I'
317	Key concepts 3	This concept should be modified as 3. Determinant of a square matrix $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$ is the real number ad-bc. This is denoted by $\begin{vmatrix} a & b \\ c & d \end{vmatrix}$
318	Key concept 5 concept 6 At the end in the box	In this 'AB = I' should be replaced by 'AB = BA = I' This concept may be dropped and numbering should be modified The following concept should also be incorporated 8. Cramers Rule for $ax + by = c$ $px + qy = r$ If $\lvert A \rvert = \begin{vmatrix} a & b \\ p & q \end{vmatrix} \neq 0$,

	Answer 2 x 12	$\|B_1\| = \begin{vmatrix} c & b \\ r & q \end{vmatrix}$, $\|B_2\| = \begin{vmatrix} a & c \\ p & r \end{vmatrix}$ then $x = \frac{\|B_1\|}{\|A\|}$ and $y = \frac{\|B_2\|}{\|A\|}$ This answer should be 'True' The answer is $x = \frac{31}{13}$, $y = -\frac{24}{13}$
319	Exercise 2 Problme 6 iv v Type (b) Problem 10 Exercise 3 Problem Type (b), 1 v Exercise 3 Type (b) Problem 7	Answer is $\begin{pmatrix} -5 & 2 \\ -3 & -6 \end{pmatrix}$ Answer is $\begin{pmatrix} 12 & -2 \\ 3 & -13 \end{pmatrix}$ Answer should be Rs. 142 Answer is non-singular $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ Answer should $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

	Exercise 3 Type (b) Problem 8 iv	Answer is $\begin{pmatrix} ½ & ½ \\ -1/6 & 1/6 \end{pmatrix}$ and the inference is $(AB)^{-1} = B^{-1} A^{-1}$
321	First para, the first sentence	This sentence should be modified as 'A scientific or research organisation may need to process huge scientific or project data.
	Sixth line	'of' should be should added after 'Processing'
	First para, last sentence	'was' to be replaced by 'is'
	Third para, first line	'conceived' to be replaced by 'communicated'
	Last para, first line	'of' after instructions is to be replaced by 'for'
	Last para, second line	Before the word 'software' the following words should be added. 'Program or'
	Last para, second sentence	This should be modified as This will be fed into the input unit of the computer and from the input unit it is transferred to the memory unit
	Last para	Everywhere the 'programme' word should be replaced by program
322	Diagram	Data flow and controls should be indicated differently
	First line above box	'on a computer' should be dropped
	Within the box	In 'Concept', 'C' should be small. Also 'branch of' should be deleted

	Above 12.1 Flow charts: Fifth line from the bottom Last para	The steps 2 and 3 should be combined by adding 'or' 'The' in the beginning of the sentence (i.e. before flow chart) should be deleted 'programme' should be corrected as program
323	Second para, first line Solution, first line 5^{th} step Flow chart	'take-up' should be corrected as 'take up' 'the' should be replaced by 'an' Second 'if' to be deleted and also 'c' should be in small case in Compare Input/output symbols should be parallelograms Terminal symbols should be same, i.e. start and stop
325	Flow chart	As above. Also the two right hand output box could be combined
326	First line Flow chart	'a' before 'flow' should be changed to 'the' Instead of flow chart, the steps should have been given
327	Second line from above the flow chart Flow chart Box under Is $D \geq 0$ box Left output box	'i' should also be shown along with the imaginary parts while writing x_1 and x_2 'No' after 'Is a = 0' box should be in proper place Here '-D' should be replaced by 'D' 'i' also should be used along with I.P. Input/output boxes should be of same shape. Also terminal symbols should be the same
328	(a) 1	'What are' should be replaced with 'List'

	(b) Long answer (Essay) type (b) 5 First line (b) 6 … given four …	'(Essay)' should be deleted 'simple' should be deleted This should be '… four given …'
329	Last line, within the brackets	This should be '(steps 4 and 5)'
330	Fig. 12.6	Output symbol should be changed. Also terminal symbols should be uniform (for start and stop)
331	Fig. 12.8	As above
332	Solution, 4th line from the bottom	'_' infront of 'th' should be dropped
333	The Algorithm	This algorithm should be made efficient
334	Fig. 12.10 Fig description (Last two lines) Problem 1 Problem 4 Problem 9 Flow chart	The last output box containing 'write A' should be dropped. Also out box should be changed. Terminal symbols should be uniform In the first line 'at the end of 5 years' should be modified as 'at the end of each year for 5 years' Factorial symbol should be prroper 'not' should be added before 'using' Here flow chart for problem 8 should be asked Output symbol should be changed
335	Key terms and concepts 1. Computer 2. Computation	Here the term 'fastly' should be dropped 'and comparison' should be added after calculation

	3. Algorithm 5. Program 6. 7. Major components of a computer 8. Answers 11(i)

	Against this term 'computation' should be replaced by 'completion' The line against should be modified as "Algorithm to solve a problem with the help of a computer" This should be re-written as 6. Types of boxes used in flow chart: Rectangle, Diamond shape, Parallelogram, Oval Against this the line should be modified as Input unit, Central processing unit, Output unit 'only' should be dropped and 'and without loops' should be added at the end. The correct answer is 'Control unit'

EVALUATORS

1. Dr. D. Basavayya
   Regional Institute of Education
   Mysore

2. Mr. B. Jayaram Bhat
   D.M. School
   Mysore

3. Dr. B.S.P. Raju
   Regional Institute of Education
   Mysore

4. Dr. N.B. Badrinarayan
   Mysore

5. Dr. V. Shankaram
   Chennai