A graphic experience

If all the equations below are graphed on the same set of coordinates, the result is a picture. Students enjoy the exercise, and it is especially easy to check the accuracy of the work.

1. $(x + 3)^2 + (y - 3)^2 = 1$
2. $(x + 3)^2 + (y - 3)^2 = 0$
3. $y = 0$ for $\frac{2}{3}\sqrt{5} \le |x| \le 9$ or $|x| \ge 13$
4. $(x - 3)^2 + (y - 3)^2 = 1$
5. $(x - 3)^2 + (y - 3)^2 = 0$
6. $(x + 11)^2 + y^2 = 4$ $(y \ge 0)$
7. $(x + 12)^2 + y^2 = 1$ $(y \le 0)$
8. $(x + 10)^2 + y^2 = 1$ $(y \le 0)$
9. $(x - 10)^2 + y^2 = 1$ $(y \le 0)$
10. $(x - 12)^2 + y^2 = 1$ $(y \le 0)$
11. $(x - 11)^2 + y^2 = 4$ $(y \ge 0)$
12. $x^2 + y^2 = 49$ $(y \ge 0)$
13. $9x^2 + 4(y + 2)^2 = 36$ $(y \le 0)$

A collection of such graphing exercises would be useful and enjoyable, and the writer would be most interested in hearing of others that anyone might discover or devise.

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Book Reviews

J.J. Del Grande, P.J. Jones, I. Lowe and L. Morrow. *Math Book 2*. Calgary: 1972. 342 pp. $4.75.

Math Book 2 is the second to be published in a series of mathematics books for the junior and senior high school years. *Math Book 2* is one of the most attractively arranged and presented books which I have seen. The authors make excellent use of diagrams and pictures which are contemporary in order to get and maintain the interest of the students. Extensive use of colors adds considerably to the appeal and attractiveness of the book. The size of print makes for easy reading. References made in the book are to things of interest to students this age. I don't expect students would be bored with an arrangement and format of this nature.

The vocabulary is kept to a minimum and is at a level which the average Grade VIII student can read and comprehend. Explanations are systematic step-by-step procedures, mostly self-explanatory. (A good example is the instructions on the use of the protractor. Usually this information is not even included with an introduction to geometric constructions.)

The book is very cleverly arranged so that a topic is adequately covered yet not overdone. It makes good use of review exercises and computation practice. Included is an especially comprehensive explanation of positive and negative integers with many practical examples.

Most of the topics outlined in the *Junior High School Course Outlines* for Alberta are adequately covered in the book. The text is geared to the large group of students in the middle, which has often been neglected in the past, but also challenges above-average students with recreational enrichment activities, puzzle problems, and so on.

One of the best recommendations for the book is that students who have had an opportunity to look at it, almost refuse to put it down, and will pick it up to study at every opportunity.

H.A. Elliott *et al. Project Mathematics*. Toronto: Holt, Rinehart and Winston, 1972. Books 8, 9, and 10 are bound together in hardback for $5.95. The others are singly bound in paperback for $1.75 (Book 13) and $2.10 (Books 14, 15, and 16).

The mathematics books entitled *Project Mathematics* are an attractive and well-illustrated series. Excellent use of a variety of interesting algorithms is made for the purpose of introducing and reintroducing the basic operations of addition, subtraction, multiplication and division as they relate to integers, fractions and decimals. As students proceed through the books, the material is graduated so as to not leave gaps.

At each project level, the skills necessary for problem solving are developed by using problems that are relevant to the mathematical concepts and to real-life situations of the students.

In line with the thinking of such a noted author as Piaget, good use of concrete and semi-concrete materials is used to develop concepts. The use of these types of materials is emphasized throughout the entire series, but as one would expect, becomes somewhat less at the upper levels.

Good use is made of color in presenting the concepts of charts and graphs at all levels. Project machines are used to introduce linear functions, circumference, and so on in order to add a bit of intrigue. Operations involving the basic concepts are introduced at various levels using a variety of eye-catching techniques. Games are used at all levels to develop numerous concepts.

An excellent teacher's guide has been developed for Books 8, 9 and 10. For each chapter it outlines the concepts and skills to be taught, recommended teaching procedures, activities to precede the use of the textbook and ideas for extra and follow-up activities. Also provided in the guide is a comprehensive index for all concepts and a complete answer key.

Emphasis is placed on individualizing the program, and not rigidly following any textbook or guidebook. Students are to be actively involved in all phases of the learning program.

In total I am very pleased with this series of books. At all levels they are particularly relevant to our time and place. Although the major placement for material in these books would be in the elementary grades, books 14-16 in particular would prove of great value for reintroducing the basic operatives, sets, geometry, graphing and problem-solving at the junior-high school level. So often the reintroduction of these topics proves to be very unimaginative and deadly. The use of the techniques outlined in the *Project Mathematics* series should make the reintroduction of these topics challenging and interesting.

I would recommend the individualizing of all of the "Project Books", which would promote their use and versatility.