HP 50g graphing calculator

user's guide

Edition 1
HP part number F2229AA-90006

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Preface

You have in your hands a compact symbolic and numerical computer that will facilitate calculation and mathematical analysis of problems in a variety of disciplines, from elementary mathematics to advanced engineering and science subjects. Although referred to as a calculator, because of its compact format resembling typical hand-held calculating devices, the HP 50g should be thought of as a graphics/programmable hand-held computer.

The HP 50g can be operated in two different calculating modes, the *Reverse Polish Notation* (RPN) mode and the *Algebraic* (ALG) mode (see page 1-13 for additional details). The RPN mode was incorporated into calculators to make calculations more efficient. In this mode, the operands in an operation (e.g., '*2*' and '*3*' in the operation '*2+3*') are entered into the calculator screen, referred to as the *stack*, and then the operator (e.g., '*+*' in the operation '*2+3*') is entered to complete the operation. The ALG mode, on the other hand, mimics the way you type arithmetic expressions in paper. Thus, the operation '*2+3*', in ALG mode, will be entered in the calculator by pressing the keys '*2*', '*+*', and '*3*', in that order. To complete the operation we use the ENTER key. Examples of applications of the different functions and operations in this calculator are illustrated in this user's guide in both modes.

This guide contains examples that illustrate the use of the basic calculator functions and operations. The chapters are organized by subject in order of difficulty. Starting with the setting of calculator modes and display options, and continuing with real and complex number calculations, operations with lists, vectors, and matrices, detailed examples of graph applications, use of strings, basic programming, graphics programming, string manipulation, advanced calculus and multivariate calculus applications, advanced differential equations applications (including Laplace transform, and Fourier series and transforms), and probability and statistic applications.

For symbolic operations the calculator includes a powerful Computer Algebraic System (CAS) that lets you select different modes of operation, e.g., complex numbers vs. real numbers, or exact (symbolic) vs. approximate (numerical) mode. The display can be adjusted to provide textbook-type expressions, which can be useful when working with matrices, vectors, fractions, summations, derivatives, and integrals. The high-speed graphics of the calculator produce complex figures in very little time.

Thanks to the infrared port, the RS232 port, and the USB port and cable provided with your calculator, you can connect your calculator with other calculators or computers. This allows for fast and efficient exchange of programs and data with other calculators or computers. The calculator provides a flash memory card port to facilitate storage and exchange of data with other users.

The programming capabilities of the calculator allow you or other users to develop efficient applications for specific purposes. Whether it is advanced mathematical applications, specific problem solution, or data logging, the programming languages available in your calculator make it into a very versatile computing device.

We hope your calculator will become a faithful companion for your school and professional applications.

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