

# Appendix

- 1 Error Message Table
- 2 Input Ranges
- 3 Specifications
- 4 Index
- 5 Key Index
- 6 P Button (In case of hang up)
- 7 Power Supply



# 1 Error Message Table

Message	Meaning	Countermeasure
Syntax ERROR	<ul style="list-style-type: none"> <li>Illegal syntax</li> <li>Attempt to input an illegal command</li> </ul>	<ul style="list-style-type: none"> <li>Press <b>[ESC]</b> to display the error and make necessary corrections.</li> </ul>
Ma ERROR	<ul style="list-style-type: none"> <li>Calculation result exceeds the display range.</li> <li>Calculation is outside the input range of a function.</li> <li>Mathematical error (division by zero, etc.)</li> <li>Sufficient precision could not be obtained for <math>\Sigma</math> calculation, differential calculation, etc.</li> <li>Solution could not be obtained for equation calculation, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Check input values and make corrections to ensure that values are within allowable limits.</li> </ul>
Go ERROR	<ol style="list-style-type: none"> <li>No corresponding Lbl <math>n</math> for Goto <math>n</math>.</li> <li>No program stored in program area Prog "file name".</li> </ol>	<ol style="list-style-type: none"> <li>Correctly input a Lbl <math>n</math> to correspond to the Goto <math>n</math>, or delete the Goto <math>n</math> if not required.</li> <li>Store a program in program area Prog "file name", or delete the Prog "file name" if not required.</li> </ol>
Nesting ERROR	<ul style="list-style-type: none"> <li>Nesting of subroutines by Prog "file name" exceeds 10 levels.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that Prog "file name" is not used to return from subroutines to main routine. If used, delete any unnecessary Prog "file name".</li> <li>Trace the subroutine jump destinations and ensure that no jumps are made back to the original program area. Ensure that returns are made correctly.</li> </ul>
Stack ERROR	<ul style="list-style-type: none"> <li>Execution of calculations that exceed the capacity of the stack for numeric values or stack for commands.</li> </ul>	<ul style="list-style-type: none"> <li>Simplify the formulas to keep stacks within 10 levels for the numeric values and 26 levels for the commands.</li> <li>Divide the formula into two or more parts.</li> </ul>



$\alpha$ -1-2  
Error Message Table

Message	Meaning	Countermeasure
Memory ERROR	<ul style="list-style-type: none"> <li>Operation or memory storage operation exceeds remaining memory capacity.</li> </ul>	<ul style="list-style-type: none"> <li>Keep the number of variables you use for the operation within the number of variables currently available.</li> <li>Simplify the data you are trying to store to keep it within the available memory capacity.</li> <li>Delete no longer needed data to make room for the new data.</li> </ul>
Argument ERROR	<ul style="list-style-type: none"> <li>Incorrect argument specification for a command that requires an argument.</li> </ul>	<ul style="list-style-type: none"> <li>Correct the argument.</li> </ul>
Dimension ERROR	<ul style="list-style-type: none"> <li>Illegal dimension or list used during matrix calculations.</li> </ul>	<ul style="list-style-type: none"> <li>Check the matrix or list dimension.</li> </ul>
Range ERROR	<ol style="list-style-type: none"> <li>① Input of an improper V-Window value.</li> <li>② V-Window range settings exceeded when a graph is redrawn.</li> <li>③ Input of an improper value on the range screen and use of that value for execution.</li> </ol>	<ol style="list-style-type: none"> <li>① Change the V-Window value so it is within range.</li> <li>② Redraw using the proper settings.</li> <li>③ Input a proper range value.</li> </ol>
Condition ERROR	<ul style="list-style-type: none"> <li>Execution of a calculation or function before all conditions required for execution are met.</li> </ul>	<ul style="list-style-type: none"> <li>Check the conditions and make any necessary corrections.</li> </ul>
Non-Real ERROR	<ol style="list-style-type: none"> <li>① Calculation that produces a complex number when Real is specified for the Complex Mode setting on the SET UP screen, even though the argument is a real number.</li> <li>② Calculation that produces a complex number when Real is specified for the Answer Type setting on the SET UP screen, even though the argument is a real number. (ALGEBRA FX 2.0 PLUS only)</li> </ol>	<ol style="list-style-type: none"> <li>① Change the Complex Mode setting to something other than Real.</li> <li>② Change the Answer Type setting to something other than Real. (ALGEBRA FX 2.0 PLUS only)</li> </ol>





$\alpha$ -1-3  
Error Message Table

Message	Meaning	Countermeasure
Complex Number In List	<ul style="list-style-type: none"> <li>List containing complex number used in a calculation or operation for which complex number data is invalid.</li> </ul>	<ul style="list-style-type: none"> <li>Change all data in the list to real numbers.</li> </ul>
Complex Number In Matrix	<ul style="list-style-type: none"> <li>Matrix containing complex number used in a calculation or operation for which complex number data is invalid.</li> </ul>	<ul style="list-style-type: none"> <li>Change all data in the matrix to real numbers.</li> </ul>
Can't Solve! Adjust Initial Value Or Bounds. Then Try Again	<ul style="list-style-type: none"> <li>Solve could not obtain a solution within the specified range.</li> </ul>	<ul style="list-style-type: none"> <li>Change the specified range.</li> <li>Correct the input expression.</li> </ul>
No Variable	<ul style="list-style-type: none"> <li>No variable specified within a graph function being used for Dynamic Graph.</li> <li>No variable within a Solve equation.</li> </ul>	<ul style="list-style-type: none"> <li>Specify a variable for the graph function.</li> </ul>
Iteration ERROR	<ol style="list-style-type: none"> <li>① No convergence of Solve solutions.</li> <li>② No integration or differential calculation solution that satisfies operation ending condition (<i>tol</i> value).</li> </ol>	<ol style="list-style-type: none"> <li>① Change the initial estimated value to one that is nearer to the solution.</li> <li>② Increase the <i>tol</i> value to reduce precision.</li> </ol>
Com ERROR	<ul style="list-style-type: none"> <li>Problem with cable connection or parameter setting during program data communications.</li> </ul>	<ul style="list-style-type: none"> <li>Check the cable connection.</li> </ul>
Transmit ERROR	<ul style="list-style-type: none"> <li>Problem with cable connection or parameter setting during data communications.</li> </ul>	<ul style="list-style-type: none"> <li>Check the cable connection.</li> </ul>
Receive ERROR	<ul style="list-style-type: none"> <li>Problem with cable connection or parameter setting during data communications.</li> </ul>	<ul style="list-style-type: none"> <li>Check the cable connection.</li> </ul>
Memory Full	<ul style="list-style-type: none"> <li>Memory of receiving unit became full during program data communications.</li> </ul>	<ul style="list-style-type: none"> <li>Delete some data stored in the receiving unit and try again.</li> </ul>



$\alpha$ -1-4  
Error Message Table

Message	Meaning	Countermeasure
Download ERROR	<ul style="list-style-type: none"> <li>Data communication cable disconnect during add-in installation, or incorrect data transfer conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Press  and try again.</li> <li>Press  and try again.</li> </ul>
Model Mismatch	<ul style="list-style-type: none"> <li>Attempt to perform back up between two different models.</li> </ul>	<ul style="list-style-type: none"> <li>Use two identical models.</li> </ul>
Overflow ERROR *	<ul style="list-style-type: none"> <li>Overflow of the calculation range in the Algebre Mode.</li> </ul>	<ul style="list-style-type: none"> <li>Correct the input expression.</li> </ul>
Domain ERROR *	<ul style="list-style-type: none"> <li>Overflow of the input element range in the Algebre Mode.</li> </ul>	<ul style="list-style-type: none"> <li>Correct the input expression.</li> </ul>

\* ALGEBRA FX 2.0 PLUS only



## 2 Input Ranges

Function	Input range for real number solutions	Internal digits	Precision	Notes
$\sin x$ $\cos x$ $\tan x$	(DEG) $ x  < 9 \times (10^9)^\circ$ (RAD) $ x  < 5 \times 10^7 \pi \text{rad}$ (GRA) $ x  < 1 \times 10^{10} \text{grad}$	15 digits	As a rule, precision is $\pm 1$ at the 10th digit.*	However, for $\tan x$ : $ x  \neq 90(2n+1)$ :DEG $ x  \neq \pi/2(2n+1)$ :RAD $ x  \neq 100(2n+1)$ :GRA * Complex numbers can be used as arguments.
$\sin^{-1}x$ $\cos^{-1}x$	$ x  \leq 1$	"	"	* Complex numbers can be used as arguments.
$\tan^{-1}x$	$ x  < 1 \times 10^{100}$			
$\sinh x$ $\cosh x$	$ x  \leq 230.2585092$	"	"	* Complex numbers can be used as arguments.
$\tanh x$	$ x  < 1 \times 10^{100}$			
$\sinh^{-1}x$ $\cosh^{-1}x$	$ x  < 5 \times 10^{99}$ $1 \leq x < 5 \times 10^{99}$	"	"	* Complex numbers can be used as arguments.
$\tanh^{-1}x$	$ x  < 1$			
$\log x$ $\ln x$	$1 \times 10^{-99} \leq x < 1 \times 10^{100}$	"	"	* Complex numbers can be used as arguments.
$10^x$ $e^x$	$-1 \times 10^{100} < x < 100$ $-1 \times 10^{100} < x \leq 230.2585092$	"	"	* Complex numbers can be used as arguments.
$\sqrt{x}$ $x^2$	$0 \leq x < 1 \times 10^{100}$ $ x  < 1 \times 10^{50}$			
$1/x$ $\sqrt[3]{x}$	$ x  < 1 \times 10^{100}, x \neq 0$ $ x  < 1 \times 10^{100}$	"	"	* Complex numbers can be used as arguments.
$x!$	$0 \leq x \leq 69$ ( $x$ is an integer)	"	"	
$nPr$ $nCr$	Result $< 1 \times 10^{100}$ $n, r$ ( $n$ and $r$ are integers) $0 \leq r \leq n$ , $n < 1 \times 10^{10}$	"	"	



$\alpha$ -2-2  
Input Ranges

Function	Input range for real number solutions	Internal digits	Precision	Notes
Pol (x, y)	$\sqrt{x^2 + y^2} < 1 \times 10^{100}$	15 digits	As a rule, precision is $\pm 1$ at the 10th digit.*	
Rec (r, $\theta$ )	$ r  < 1 \times 10^{100}$ (DEG) $ \theta  < 9 \times (10^9)^\circ$ (RAD) $ \theta  < 5 \times 10^7 \pi$ rad (GRA) $ \theta  < 1 \times 10^{10}$ grad	"	"	However, for $\tan \theta$ : $ \theta  \neq 90(2n+1)$ :DEG $ \theta  \neq \pi/2(2n+1)$ :RAD $ \theta  \neq 100(2n+1)$ :GRA
$\circ, ''$	$ a , b, c < 1 \times 10^{100}$ $0 \leq b, c$	"	"	
$\leftarrow \circ, ''$	$ x  < 1 \times 10^{100}$ Sexagesimal display: $ x  < 1 \times 10^7$			
$^{\wedge}(x^y)$	$x > 0$ : $-1 \times 10^{100} < y \log x < 100$ $x = 0 : y > 0$ $x < 0$ : $y = n, \frac{1}{2n+1}$ (n is an integer or a fraction) However; $-1 \times 10^{100} < y \log  x  < 100$	"	"	* Complex numbers can be used as arguments.
$^x\sqrt{y}$	$y > 0 : x \neq 0$ $-1 \times 10^{100} < \frac{1}{x} \log y < 100$ $y = 0 : x > 0$ $y < 0 : x = 2n+1, \frac{1}{n}$ ( $n \neq 0$ , n is an integer or a fraction) However; $-1 \times 10^{100} < \frac{1}{x} \log  y  < 100$	"	"	* Complex numbers can be used as arguments.
$a^{b/c}$	Total of integer, numerator and denominator must be within 10 digits (includes division marks).	"	"	

\* For a single calculation, calculation error is  $\pm 1$  at the 10th digit. (In the case of exponential display, calculation error is  $\pm 1$  at the last significant digit.) Errors are cumulative in the case of consecutive calculations, which can also cause them to become large. (This is also true of internal consecutive calculations that are performed in the case of  $^{\wedge}(x^y)$ ,  $^x\sqrt{y}$ ,  $x!$ ,  $^3\sqrt{x}$ ,  $nPr$ ,  $nCr$ , etc.)  
In the vicinity of a function's singular point and point of inflection, errors are cumulative and may become large.



Function	Input range
Binary, octal, decimal, hexadecimal calculation	<p>Values fall within following ranges after conversion:</p> <p>DEC: <math>-2147483648 \leq x \leq 2147483647</math></p> <p>BIN: <math>1000000000000000 \leq x</math>  <math>\leq 1111111111111111</math> (negative)  <math>0 \leq x \leq 0111111111111111</math> (0, positive)</p> <p>OCT: <math>20000000000 \leq x \leq 37777777777</math> (negative)  <math>0 \leq x \leq 17777777777</math> (0, positive)</p> <p>HEX: <math>80000000 \leq x \leq \text{FFFFFFFF}</math> (negative)  <math>0 \leq x \leq 7\text{FFFFFFFF}</math> (0, positive)</p>





## 3 Specifications

---

**Variables:** 28

**Calculation range:**

$\pm 1 \times 10^{-99}$  to  $\pm 9.999999999 \times 10^{99}$  and 0. Internal operations use 15-digit mantissa.

**Exponential display range:** Norm 1:  $10^{-2} > |x|$ ,  $|x| \geq 10^{10}$

Norm 2:  $10^{-9} > |x|$ ,  $|x| \geq 10^{10}$

**Program capacity:** 144 kbytes (max.)

**Power supply:**

**Main:** Four AAA-size batteries (LR03 (AM4) or R03 (UM-4))

**Back-up:** One CR2032 lithium battery

**Power consumption:** 0.2 W

**Approximate battery life**

**Main (ALGEBRA FX 2.0 PLUS):**

LR03 (AM4): 230 hours (continuous display of main menu)

150 hours continuous operation (5 minutes calculation, 55 minutes display)

R03 (UM-4): 140 hours (continuous display of main menu)

90 hours continuous operation (5 minutes calculation, 55 minutes display)

**Main (FX 1.0 PLUS):**

LR03 (AM4): 200 hours (continuous display of main menu)

140 hours continuous operation (5 minutes calculation, 55 minutes display)

R03 (UM-4): 120 hours (continuous display of main menu)

80 hours continuous operation (5 minutes calculation, 55 minutes display)

**Back-up:** 2 years

**Auto power off:**

Power is automatically turned off approximately six minutes or 60 minutes after last operation.

**Ambient temperature range:** 0 °C to 40 °C

**Dimensions:** 19.5 mm (H)  $\times$  82 mm (W)  $\times$  178 mm (D)

$\frac{3}{4}$ " (H)  $\times$  3  $\frac{1}{4}$ " (W)  $\times$  6  $\frac{7}{8}$ " (D)

**Weight:** Approx. 213 g (including batteries)



## Data Communications

**Method:** Start-stop (asynchronous), half-duplex

**Transmission speed (BPS):** 38400 bits/second (normal)  
9600 bits/second (H-Copy & Send/Receive)

**Parity:** None

**Bit length:** 8 bits

**Stop bit:**

Send: 3 bits

Receive: 2 bits

Includes parity (None) 1-bit

**X ON/X OFF Control:** None



## 4 Index

### Symbols

$\Delta$ List ..... 3-2-7  
 $\Sigma$  calculation ..... 2-5-10

### A

Absolute value ..... 2-6-2  
Add-ins ..... 10-7-1  
Algebra Mode ..... 7-2-1  
Algebra Mode operation ..... 7-1-3  
Angle unit ..... 2-3-1, 2-4-2  
Ans ..... 2-2-5  
Answer function ..... 2-2-5  
Answer memory ..... 2-2-5, 7-1-7  
APO settings ..... 9-3-1  
Argument ..... 2-6-2  
Arithmetic calculations ..... 2-1-1  
Asymptotes ..... 5-11-21  
Auto Mode ..... 7-3-8  
Auto power off ..... 9-3-1,  $\alpha$ -7-5  
Axis of symmetry ..... 5-11-20

### B

Backing up data ..... 10-8-7  
Backup data, sending ..... 10-4-4  
Bar graph ..... 6-2-1  
Binary calculation ..... 2-7-1  
Bitwise operation ..... 2-7-4  
Box zoom ..... 5-2-7  
Broken line graph ..... 6-2-3

### C

Calc window ..... 5-2-12  
Calculation execution indicator ..... 1-2-5

Calculation priority sequence ..... 2-1-3  
Calculation results of a paired-variable  
graph ..... 6-3-11, 6-4-2  
Calculation results of a single-variable  
graph ..... 6-2-4, 6-4-2  
CAS Mode ..... 7-1-1  
Catalog ..... 1-3-5  
Cell, editing ..... 3-1-3  
Center ..... 5-11-19  
Circle ..... 5-1-5  
Clipboard ..... 1-3-4  
Column operations ..... 2-8-9  
Combination ..... 2-4-9  
Comments ..... 5-10-3  
Complex number calculations ..... 2-6-1  
Composite function ..... 2-1-3, 5-3-3  
Conic section ..... 5-11-17  
CONICS Mode ..... 5-1-5  
Conjugate complex number ..... 2-6-3  
Connecting the unit to a personal  
computer ..... 10-3-1  
Connecting the unit with a CASIO Label  
Printer ..... 10-2-1  
Connecting two units ..... 10-1-1  
Continuous calculations ..... 2-2-5, 7-1-7  
Contrast adjustment ..... 9-3-1  
Coordinate conversion ..... 2-4-2, 2-4-8  
Coordinate rounding ..... 5-11-7  
Coordinates for given points ..... 5-11-13  
Coordinates on a graph line ..... 5-11-1  
Copy range ..... 1-3-4  
Copying a regression graph formula  
..... 6-3-11  
Copying a table column to a list ..... 5-7-8  
Corrections ..... 1-3-4  
Cubic regression graph ..... 6-3-7



Current area ..... 10-8-1

## D

Data communication operation ..... 10-4-1  
DATA ERROR message .....  $\alpha$ -6-1  
Debugging ..... 8-3-1  
Decimal calculations ..... 2-7-1  
Decimal places ..... 2-1-2, 2-3-1  
Degrees/minutes/seconds ..... 1-2-5, 2-4-2  
Derivative item ..... 5-7-3, 5-11-3  
Determinant ..... 2-8-18  
Differential calculations ..... 2-5-2  
Directrix ..... 5-11-20  
Display format ..... 2-3-1  
Display screens ..... 1-2-3  
Draw/non draw status of a graph ..... 5-3-6  
Drawing a line ..... 5-10-1  
Dual graph ..... 5-5-1  
DYNA Mode ..... 5-8-1  
Dynamic graph ..... 5-8-1  
Dynamic graph functions in a program  
..... 8-6-5  
Dynamic graph memory ..... 5-8-6

## E

Eccentricity ..... 5-11-21  
Editing calculations ..... 1-3-1  
Ellipse ..... 5-1-5  
Eng ..... 2-3-2, 2-4-11  
Eqn memory ..... 7-1-6  
EQUA Mode ..... 4-1-1  
Error message ..... 2-1-5,  $\alpha$ -1-1  
Estimated value ..... 6-4-4  
Exponential function ..... 2-4-4  
Exponential regression graph ..... 6-3-8

## F

Factor zoom ..... 5-2-9  
File name, editing ..... 8-4-2  
File name, registering ..... 8-1-1, 8-1-2  
Flash memory ..... 10-8-1  
FMEM ..... 2-2-2  
Focus ..... 5-11-18  
Formula memory ..... 7-1-4  
Formula number area ..... 7-1-1  
Fraction ..... 1-2-5, 2-4-10  
Freehand drawing ..... 5-10-5  
Function analysis ..... 5-11-1  
Function memory ..... 2-2-2, 7-1-6  
Function menu ..... 1-2-3, 5-2-11  
Function, edit/change/delete ..... 5-3-5

## G

Generating a table ..... 5-7-2  
Graph background ..... 5-10-7  
Graph function, recall ..... 5-3-7  
Graph functions in a program ..... 8-6-3  
Graph functions, store ..... 5-3-7  
Graph memory ..... 5-3-7, 7-1-6  
Graph parameters, changing ..... 6-1-2  
Graph screen ..... 1-2-3  
Graph to table ..... 5-11-5  
Graph type, specifying ..... 5-3-1  
Graph, store/recall ..... 5-4-1  
Graph-Table linking ..... 5-7-15  
GRPH•TBL Mode ..... 5-1-1

## H

Hexadecimal calculation ..... 1-2-5, 2-7-1  
Higher degree equations ..... 4-2-1



Histogram .....	6-2-1
Hyperbola .....	5-1-5
Hyperbolic function (HYP) .....	2-4-2, 2-4-5

## I

Icon .....	1-2-1
Imaginary part .....	2-6-3
Inequality .....	5-3-2
Input area .....	7-1-1
Input ranges .....	$\alpha$ -2-1
Inputting calculations .....	1-3-1
Integral value for a given range ....	5-11-15
Integration calculation .....	2-5-7
Integration graph .....	5-6-3
Intercepts .....	5-11-19
Inverse hyperbolic function .....	2-4-2, 2-4-5
Inverse trigonometric function .....	2-4-3

## K

Key markings .....	1-1-3
Key table .....	1-1-2

## L

Latus rectum .....	5-11-18
Linear equation .....	7-3-2
Linear inequality .....	7-3-2
Linear regression graph .....	6-3-6
LINK Mode .....	10-4-1
List data, manipulating .....	3-2-1
List data in the CAS Mode .....	7-1-2
List files, switching .....	3-4-1
List sort functions in a program .....	8-6-8
List, arithmetic calculations .....	3-3-1
List, inputting and editing .....	3-1-1
Logarithmic function .....	2-4-4

Logarithmic regression graph .....	6-3-8
Logistic regression graph .....	6-3-10
Low battery message .....	1-8-2, $\alpha$ -7-1

## M

Main Memories .....	9-2-1
Main screen .....	5-5-1
Manual graphing .....	5-6-1
Manual Mode .....	7-3-6
MatAns .....	2-8-1
Matrices using matrix commands .....	2-8-10, 2-8-13
Matrix arithmetic operation .....	2-8-17
Matrix Data in the CAS Mode .....	7-1-2
Matrix inversion .....	2-8-19
Matrix row operations in a program ..	8-6-1
Matrix transposition .....	2-8-18
Matrix, dimension .....	2-8-2, 2-8-12
Matrix, inputting and editing .....	2-8-2
Maximum/minimum value calculation .....	2-5-12
Med-box graph .....	6-2-2
Med-Med graph .....	6-3-6
Memory .....	2-2-1
Memory capacity .....	2-1-6
Memory Mode .....	10-8-1
Memory operations .....	9-2-1
Memory Usage .....	9-2-1
Menu bar command .....	1-2-3
Mode set up .....	1-7-1
Modified box graph .....	6-2-2
Multi-Replay .....	1-3-3
Multiple graphs .....	6-3-12
Multiplication sign .....	2-1-5
Multistatements .....	2-2-7



**N**

Natural result display area .....	7-1-1
Negative value .....	2-7-4
Norm 1/2 mode .....	1-2-4, 2-3-2
Normal display .....	1-2-4, 2-1-2, 2-3-2
Normal distribution curve .....	6-2-3
Normal probability distribution calculation .....	6-4-5
Normal probability plot .....	6-2-1
Number system .....	2-7-3
Number system transformation .....	2-7-5
Numeric calculations (NUM) .....	2-4-1

**O**

Octal calculations .....	2-7-1
Optimizing the storage area .....	10-8-9
Option (OPTN) menu .....	1-4-1
Output area .....	7-1-1
Overflow .....	2-1-5
Overwrite the graphs .....	5-6-5

**P**

P button .....	$\alpha$ -6-1
Paired-variable statistical graph .....	6-3-1
Parabola .....	5-1-5
Parametric function .....	5-3-2
Parentheses .....	2-1-1
Password .....	8-4-3
Pasting text .....	1-3-5
Permutation .....	2-4-9
Picture memory .....	5-4-1
Plot .....	5-1-4
Point of intersection of two graphs .....	5-11-11
Polar coordinate function .....	5-3-1
Polar form transformation .....	2-6-4

POLY .....	4-2-1
Power regression graph .....	6-3-9
Power supply .....	$\alpha$ -7-1
PRGM Mode .....	8-1-1
Probability distribution graph .....	6-4-7
Probability/distribution calculations (PROB) .....	2-4-1
Program (PRGM) menu .....	1-6-1
Program file, load .....	10-8-3
Program file, searching .....	8-4-1, 10-8-5
Program file, store .....	10-8-2
Program files, deleting .....	10-8-4
Program library .....	8-8-1
Program mode command .....	8-7-1
Program, BASE Mode .....	8-2-2
Program, deleting .....	8-4-2
Program, editing .....	8-3-1
Program, inputting .....	8-2-1
Program, running .....	8-1-1
Program, searching for data .....	8-3-4
Pull-up menu .....	1-2-3

**Q**

Quadratic differential calculation .....	2-5-5
Quadratic equation .....	7-3-2
Quadratic regression graph .....	6-3-7
Quartic regression graph .....	6-3-7

**R**

Radius .....	5-11-19
Raising a matrix to a power .....	2-8-20
Random number .....	2-4-7
Real part .....	2-6-3
Rectangular coordinate function .....	5-3-1
Rectangular transformation .....	2-6-4
RECUR Mode .....	5-9-1



Recursion formula number table .....	5-9-1
Recursion Table & Graph functions in a program .....	8-6-7
Regression calculation .....	6-4-3
Regression graph .....	6-3-3
Replay .....	1-3-3, 7-1-7
Reset .....	9-4-1
Residual calculation .....	6-3-10
Root .....	5-11-9
Row calculations .....	2-8-5
RUN•MAT Mode .....	2-1-1

## S

Scalar multiplication .....	2-8-6
Scatter diagram .....	6-3-1
Screen shot, saving .....	10-6-1
Screen shot, sending .....	10-6-1
Set up screen .....	1-7-1
Sexagesimal operations .....	1-2-5, 2-4-2
Significant digits .....	2-1-2, 2-3-2
SIML .....	4-1-1
Simultaneous linear equations .....	4-1-1, 7-3-1
Single-variable statistical graph .....	6-2-1
Sinusoidal regression graph .....	6-3-9
Sketch .....	5-10-1
Solution Memory .....	7-1-8
Solve calculation .....	2-5-1, 4-3-1
Solve calculation function in a program .....	8-6-9
Solve Mode .....	7-3-4
Sorting list values .....	3-1-5
Squaring a matrix .....	2-8-19
Stacks .....	2-2-6
STAT Mode .....	6-1-1
Statistical calculation data lists .....	6-4-1
Statistical calculations and graphs in a program .....	8-6-9

Statistical data list .....	6-1-1
Storage area .....	10-8-1
Storage Memories .....	9-2-1
Sub-screen .....	5-5-1
Submenu .....	1-2-3
System language setting .....	9-3-2
SYSTEM Mode .....	9-1-1
System setting menu .....	9-1-1

## T

Table & Graph functions in a program .....	8-6-6
Table range .....	5-7-1
Table, deleting .....	5-7-7
Tables .....	5-7-1
Tables, editing .....	5-7-5
Text display .....	8-6-1
Text screen .....	1-2-3
Trace .....	5-11-1
Trigonometric function .....	2-4-3
TUTOR .....	7-3-1
Tutorial lock .....	9-5-1
Tutorial Mode .....	7-3-1

## V

V-Window .....	5-2-1
V-Window memory .....	5-2-4
Variable .....	2-2-1
Variable data (VARS) menu .....	1-5-1
Vector Data in the CAS Mode .....	7-1-2
Verify Mode .....	7-3-4
Vertex .....	5-11-18

## W

WEB graph .....	5-9-7
-----------------	-------



## X

X = constant expression ..... 5-3-2  
 $xy$  line graph ..... 6-3-1

## Z

Zoom ..... 5-2-7





**CAS, ALGEBRA, TUTOR  
Command Index**

$\int$ .....	7-1-16
$\Sigma$ .....	7-1-17
$\Pi$ .....	7-1-17
absExpand .....	7-1-21
andConnect .....	7-1-21
approx .....	7-1-15
arcLen .....	7-1-17
arrange .....	7-2-1
cExpand .....	7-1-15
clear .....	7-1-22
clearVarAll .....	7-1-22
collect .....	7-1-14
combine .....	7-1-14
denominator .....	7-1-18
diff .....	7-1-16
eliminate .....	7-1-20
eqn .....	7-1-21
exchange .....	7-1-20
expand .....	7-1-11
expToTrig .....	7-1-13
factor .....	7-1-11
gcd .....	7-1-18
getRight .....	7-1-20
invert .....	7-1-20
lcm .....	7-1-19
lim .....	7-1-16
numerator .....	7-1-18
rclAllEqn .....	7-1-19
rclEqn .....	7-1-19
replace .....	7-2-1
rewrite .....	7-1-19
rFactor .....	7-1-11
simplify .....	7-1-13
solve .....	7-1-12

substitute .....	7-1-14
tanLine .....	7-1-18
taylor .....	7-1-17
tCollect .....	7-1-12
tExpand .....	7-1-12
trigToExp .....	7-1-13

**(List Commands)**

$\Delta$ List .....	7-1-27
Augment .....	7-1-28
CumI .....	7-1-26
Dim .....	7-1-23
Fill .....	7-1-28
List $\rightarrow$ Mat .....	7-1-30
List $\rightarrow$ Vect .....	7-1-30
Max .....	7-1-24
Mean .....	7-1-24
Median .....	7-1-25
Min .....	7-1-23
Percent .....	7-1-26
Prod .....	7-1-26
Seq .....	7-1-28
SortA .....	7-1-29
SortD .....	7-1-29
StdDev .....	7-1-27
SubList .....	7-1-29
Sum .....	7-1-25
Variance .....	7-1-27

**(Matrix Commands)**

*Row .....	7-1-38
*Row+ .....	7-1-38
Augment .....	7-1-35
Det .....	7-1-31
Diag .....	7-1-37
Dim .....	7-1-31



EigVc .....	7-1-32
EigVl .....	7-1-32
Fill .....	7-1-35
Identify .....	7-1-35
LU .....	7-1-34
Mat → List .....	7-1-37
Mat → Vect .....	7-1-37
Norm .....	7-1-31
Ref .....	7-1-33
Row+ .....	7-1-39
Rref .....	7-1-33
SubMat .....	7-1-36
Swap .....	7-1-38
Trn .....	7-1-34

#### **(Vector Commands)**

Angle .....	7-1-41
Augment .....	7-1-41
CrossP .....	7-1-40
Dim .....	7-1-40
DotP .....	7-1-40
Fill .....	7-1-41
Norm .....	7-1-40
UnitV .....	7-1-41
Vect → List .....	7-1-42
Vect → Mat .....	7-1-42

































## PRGM Command Index

Break .....	8-5-6	Goto~Lbl .....	8-5-10
ClrGraph .....	8-5-11	If~Then~(Else~)IfEnd .....	8-5-4
ClrList .....	8-5-11	Isz .....	8-5-11
ClrMat .....	8-5-12	Locate .....	8-5-16
ClrText .....	8-5-12	Prog .....	8-5-7
DispF-Tbl, DispR-Tbl .....	8-5-12	Receive ( /Send ( .....	8-5-17
Do~LpWhile .....	8-5-5	Return .....	8-5-8
DrawDyna .....	8-5-12	Stop .....	8-5-8
DrawFTG-Con, DrawFTG-Plt .....	8-5-13	While~WhileEnd .....	8-5-6
DrawGraph .....	8-5-13	? (Input Command) .....	8-5-2
DrawR-Con, DrawR-Plt .....	8-5-13	▲ (Output Command) .....	8-5-3
DrawRΣ-Con, DrawRΣ-Plt .....	8-5-14	: (Multi-statement Command) .....	8-5-3
DrawStat .....	8-5-14	↵ (Carriage Return) .....	8-5-3
DrawWeb .....	8-5-14	' (Comment Text Delimiter) .....	8-5-3
Dsz .....	8-5-9	=, ≠, >, <, ≥, ≤	
For~To~(Step~)Next .....	8-5-4	(Relational Operators) .....	8-5-18
Getkey .....	8-5-15		

























# 5 Key Index




























Key	Primary Function	Combined with 	Combined with 
 	Selects 1st function menu item.	Performs copy operation.	
 	Selects 2nd function menu item.	Performs paste operation.	
 	Selects 3rd function menu item.	Shows the set up display.	
 	Selects 4th function menu item.	Shows the Catalog or opens the Calc Window.	
 	Selects 5th function menu item.	Switches display between graph and text screens.	
 	Selects 6th function menu item.	Sends a shot of the current screen to a connected device.	
	Enters number 0.	Toggles function menu display on and off.	

Key	Primary Function	Combined with 	Combined with 
	Activates shift functions of other keys and function menus.		
	Activates functions marked above function keys.		
 	Displays option menu.	Displays View Window parameter input screen.	
	Returns to the Main Menu.		
 	Allows entry of alphanumeric characters shown in red.	Locks/Unlocks entry of alphanumeric characters.	
 	Displays the variable data menu.	Displays program command menu.	Enters character $r$ .
 	Press between two values to make second value exponent of first.	Press between entering values for X & Y to show .xth root of y.	Enters character $\theta$ .
 	Back steps to the previous screen without making any changes.	Returns directly to initial screen of the mode.	



Key	Primary Function	Combined with 	Combined with 
	Moves cursor upward. Scrolls screen. Switches to previous function in trace mode.		
	Moves cursor downward. Scrolls screen. Switches to next function in trace mode.		
	Moves cursor to left. Scrolls screen. Press after  to display calculation from end.		
	Moves cursor to right. Scrolls screen. Press after  to display calculation from beginning.		
<sup>A</sup> 	Allows input of variable X, $\theta$ , and T.		Enters letter A.
<sup>10<sup>x</sup></sup> B 	Press before entering value to calculate common logarithm.	Press before entering exponent value of 10.	Enters letter B.
<sup>e<sup>x</sup></sup> C 	Press before entering value to calculate natural logarithm.	Press before entering exponent value of e.	Enters letter C.
<sup>sin<sup>-1</sup></sup> D 	Press before entering value to calculate sine.	Press before entering value to calculate inverse sine.	Enters letter D.
<sup>cos<sup>-1</sup></sup> E 	Press before entering value to calculate cosine.	Press before entering value to calculate inverse cosine.	Enters letter E.
<sup>tan<sup>-1</sup></sup> F 	Press before entering value to calculate tangent.	Press before entering value to calculate inverse tangent.	Enters letter F.
<sup>d/c</sup> G 	Press between entering fraction values. Converts fraction to decimal.	Displays improper fractions.	Enters letter G.
<sup><math>\sqrt{\phantom{x}}</math></sup> H 	Press after entering value to calculate square.	Press before entering value to calculate square root.	Enters letter H.
<sup><math>\sqrt[3]{\phantom{x}}</math></sup> I 	Enters open parenthesis in formula.	Press before entering value to calculate cube root.	Enters letter I.
<sup>x<sup>-1</sup></sup> J 	Enters close parenthesis in formula.	Press after entering value to calculate reciprocal.	Enters letter J.
<sup>,</sup> K 	Enters comma.		Enters letter K.
<sup>→</sup> L 	Assigns value to a value memory name.		Enters letter L.
<sup>7</sup> M 	Enters number 7.		Enters letter M.
<sup>8</sup> N 	Enters number 8.		Enters letter N.

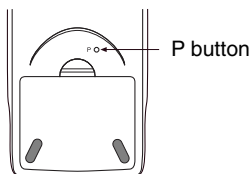


Key	Primary Function	Combined with 	Combined with 
 <sup>O</sup>	Enters number 9.		Enters letter O.
 	Deletes character at current cursor location.	Allows insertion of characters at cursor location.	
 	Turns power on. Clears the display.	Turns power off.	
 <sup>P</sup>	Enters number 4.		Enters letter P.
 <sup>Q</sup>	Enters number 5.		Enters letter Q.
 <sup>R</sup>	Enters number 6.		Enters letter R.
 <sup>S</sup>	Multiplication function.	Enters open curly bracket.	Enters letter S.
 <sup>T</sup>	Division function.	Enters close curly bracket.	Enters letter T.
List  <sup>U</sup>	Enters number 1.	Inputs List command.	Enters letter U.
Mat  <sup>V</sup>	Enters number 2.	Inputs Mat command.	Enters letter V.
 <sup>W</sup>	Enters number 3.		Enters letter W.
  <sup>X</sup>	Addition function. Specifies positive value.	Enters open bracket.	Enters letter X.
  <sup>Y</sup>	Subtraction function. Specifies negative value.	Enters close bracket.	Enters letter Y.
  <sup>Z</sup>	Enters number 0.	Inputs imaginary number unit.	Enters letter Z.
 <sup>SPACE</sup>	Enters decimal point.	Enters character =.	Enters a blank space.
 <sup>"</sup> 	Enables entry of exponent.	Inputs value of pi. Enters pi symbol.	Enters double quotation mark.
 <sup>(-)</sup>	Enter before value to specify as negative.	Recalls most recent calculation result.	
 	Displays result of calculation.	Inputs a new line.	



## 6 P Button (In case of hang up)

Pressing the P button resets the calculator to its initial defaults.



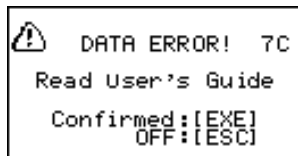
### Warning!

Never perform this operation unless you want to totally clear the memory of the calculator. If you need the data currently stored in memory, be sure to write it down somewhere before performing the P button operation.

- Pressing the P button while a calculation operation is being performed (while the calculator is performing a calculation internally) deletes all data in memory.
- You can also reset the calculator using front panel key operations (see 9-4 Reset). Use the P button to reset only while the front panel keys are disabled for some reason.

### • DATA ERROR Message

A data error indicates that data in calculator memory is seriously corrupted. This can be due to exposure of the calculator to strong electrostatic charge, temperature extremes, high humidity, etc. A data error is indicated by appearance of the screen shown below.



Press the **[EXE]** key to reset the calculator.

- The data error screen appears when you press the P button to reset the calculator or when you turn on calculator power.

### Warning!

Pressing **[EXE]** deletes all data in calculator memory.

If a data error occurs when you press **[EXE]**, it could mean that your calculator is malfunctioning. If the data error screen keeps appearing, press **[ESC]** to turn off power. Next, take the calculator to the retailer where you purchased it or to your local CASIO service provider.

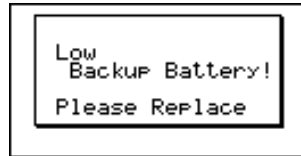
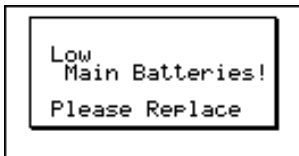


## 7 Power Supply

---

This calculator is powered by four AAA-size (LR03 (AM4) or R03 (UM-4)) batteries. In addition, it uses a single CR2032 lithium battery as a back up power supply for the memory.

If either of the following messages appears on the display, immediately turn off the calculator and replace main batteries or the back up battery as instructed.



If you try to continue using the calculator, it will automatically turn off in order to protect memory contents. You will not be able to turn power back on until you replace batteries.

Be sure to replace the main batteries at least once every two years, no matter how much you use the calculator during that time.

The batteries that come with this calculator discharge slightly during shipment and storage. Because of this, they may require replacement sooner than the normal expected battery life.

### **Warning!**

All memory contents will be deleted if you remove both the main power supply and the memory back up batteries at the same time. If you ever remove both batteries, correctly reload them and then perform the reset operation.



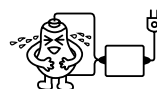


## ■ Replacing Batteries

### Precautions:

Incorrectly using batteries can cause them to burst or leak, possibly damaging the interior of the calculator. Note the following precautions:

- Be sure that the positive (+) and negative (–) poles of each battery are facing in the proper directions.
- Never mix batteries of different types.
- Never mix old batteries and new ones.
- Never leave dead batteries in the battery compartment.
- Remove the batteries if you do not plan to use the calculator for long periods.
- Never try to recharge the batteries supplied with the calculator.
- Do not expose batteries to direct heat, let them become shorted, or try to take them apart.



(Should a battery leak, clean out the battery compartment of the calculator immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)

Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.

### ● To replace the main power supply batteries

- \* Before replacing the main power supply batteries, turn on the calculator and check to see if the “Low Backup Battery!” message appears on the display. If it does, replace the memory back up battery before replacing the main power supply batteries.
- \* Never remove the main power supply and the memory back up batteries from the calculator at the same time.
- \* Never turn on the calculator while the main power supply batteries are removed or not loaded correctly. Doing so can cause memory data to be deleted and malfunction of the calculator. If mishandling of batteries causes such problems, correctly load batteries and then perform the RESET operation to resume normal operation.
- \* Be sure to replace all four batteries with new ones.

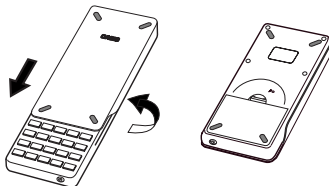


1. Press **SHIFT** **AC/ON** (OFF) to turn off the calculator.

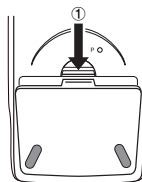
### Warning!

\*Be sure to turn the calculator off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

2. Making sure that you do not accidentally press the **AC/ON** key, slide the case onto the calculator and then turn it over.

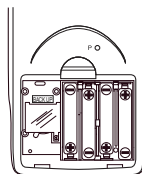


3. Remove the back cover from the calculator by pulling with your finger at the point marked ①.



4. Remove the four old batteries.

5. Load a new set of four batteries, making sure that their positive (+) and negative (–) ends are facing in the proper directions.



6. Replace the back cover.

7. Turn the calculator front side up and slide off its case.  
Next, press **AC/ON** to turn on power.



# Power supplied by memory back up battery while the main power supply batteries are removed for replacement retains memory contents.

# Do not leave the calculator without main power supply batteries loaded for long periods. Doing so can cause deletion of data stored in memory.

# If the figures on the display appear too light and hard to see after you turn on power, adjust the tint.

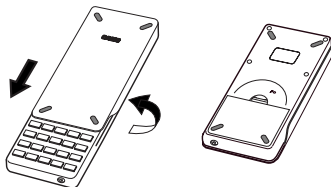
## ● To replace the memory back up battery

- \* Before replacing the memory back up battery, check to make sure the main batteries are not dead.
- \* Never remove the main power supply and the memory back up batteries from the calculator at the same time.
- \* Be sure to replace the back up power supply battery at least once 2 years, regardless of how much you use the calculator during that time. Failure to do so can cause data in memory to be deleted.

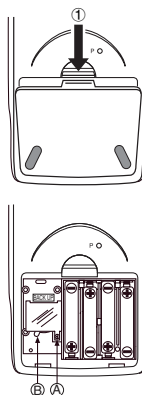
1. Press **SHIFT** **AC/ON** (OFF) to turn off the calculator.


### Warning!

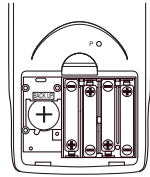
- \* Be sure to turn the calculator off before replacing battery. Replacing battery with power on will cause data in memory to be deleted.
2. Making sure that you do not accidentally press the **AC/ON** key, slide the case onto the calculator and then turn it over.



3. Remove the back cover from the calculator by pulling with your finger at the point marked ①.
4. Remove screw ㉞ on the back of the calculator, and remove the back up battery compartment cover.
5. Insert a thin, pointed non-metal object (such as a toothpick) into the hole marked ㉟ and remove the old battery.




6. Wipe off the surfaces of a new battery with a soft, dry cloth. Load it into the calculator so that its positive (+) side is facing up.
7. Install the memory protection battery cover onto the calculator and secure it in place with the screw. Next, replace the back cover.
8. Turn the calculator front side up and slide off its case. Next, press  to turn on power.



---

## ■ About the Auto Power Off Function

Calculator power turns off automatically if you do not perform any operation within the Auto Power Off trigger time you specify. You can specify either six minutes or 60 minutes as the trigger time (see “APO Settings” on page 9-3-1). To restore power, press .



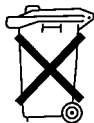
# MEMO

# MEMO

# MEMO

NL

Batterij niet weggooien,  
maar inleveren als  
KCA



CASIO ELECTRONICS CO., LTD.  
Unit 6, 1000 North Circular Road,  
London NW2 7JD, U.K.

**Important!**

Please keep your manual and all information handy for  
future reference.



**CASIO®**

**CASIO COMPUTER CO., LTD.**

6-2, Hon-machi 1-chome  
Shibuya-ku, Tokyo 151-8543, Japan