fx-9750G PLUS
CFX-9850G PLUS
CFX-9850GB PLUS
CFX-9950GB PLUS

User's Guide

CASIO®

E

http://world.casio.com/edu_e/

fx-9750G PLUS owners...

This manual covers the operations of various different calculator models. Note the meaning of the following symbols when using this manual.

Symbol	Meaning
CFX	Indicates information about a function that is not supported by the fx-9750G PLUS. You can skip any information that has this mark next to it.

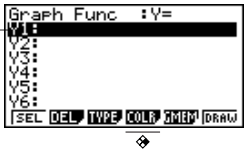
8-1 Before Trying to Draw a Graph

■ Entering the Graph Mode

On the Main Menu, select the **GRAPH** icon and enter the GRAPH Mode. When you do, the Graph Function menu appears on the display. You can use this menu to store, edit, and recall functions and to draw their graphs.

Memory area

Use ▲ and ▼ to change selection.



- {**SEL**} ... {draw/non-draw status}
- {**DEL**} ... {function delete}
- {**TYPE**} ... {graph type menu}
- {**COLR**} ... {graph color}
- {**GMEM**} ... {graph memory save/recall}
- {**DRAW**} ... {graph draw}

CFX

CFX indicates {**COLR**} is not supported by the fx-9750G PLUS.

NL

Batterij niet weggooien, maar inleveren als KCA

CE

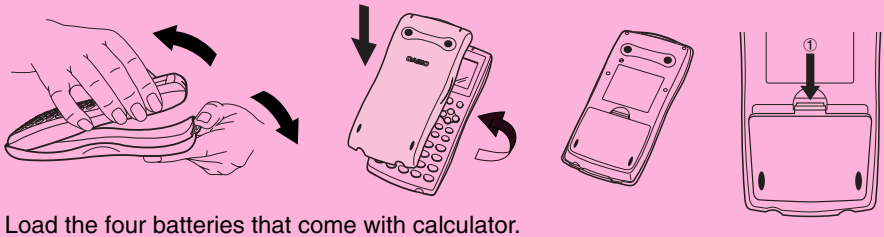
CASIO ELECTRONICS CO., LTD.
Unit 6, 1000 North Circular Road,
London NW2 7JD, U.K.

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

BEFORE USING THE CALCULATOR FOR THE FIRST TIME...

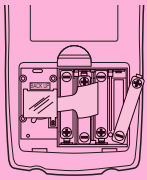
Be sure to perform the following procedure to load batteries, reset the calculator, and adjust the contrast before trying to use the calculator for the first time.

1. Making sure that you do not accidently press the AC/ON key, attach the case to the calculator and then turn the calculator over. Remove the back cover from the calculator by pulling with your finger at the point marked ①.

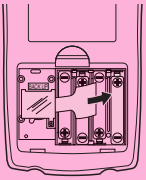


2. Load the four batteries that come with calculator.

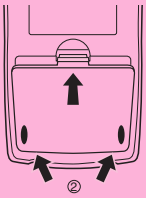
- Make sure that the positive (+) and negative (–) ends of the batteries are facing correctly.

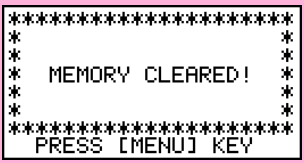


3. Remove the insulating sheet at the location marked “BACK UP” by pulling in the direction indicated by the arrow.

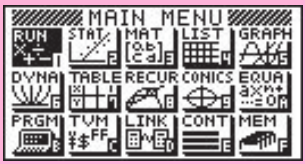


4. Replace the back cover, making sure that its tabs enter the holes marked ② and turn the calculator front side up. The calculator should automatically turn on power and perform the memory reset operation.

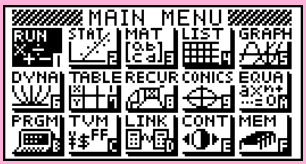




5. Press [MENU].

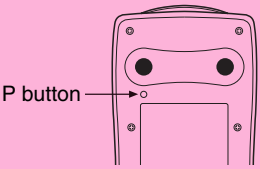


* The above shows the CFX-9850 (9950)G(B) PLUS screen.

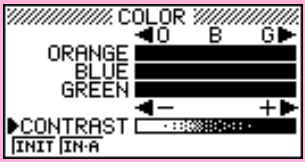


* The above shows the fx-9750G PLUS screen.

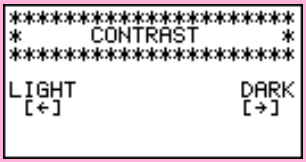
- If the Main Menu shown above is not on the display, press the P button on the back of the calculator to perform memory reset.



6. Use the cursor keys (▲, ▼, ◀, ▶) to select the **CONT** icon and press [EXE] or simply press [COS] to display the contrast adjustment screen.



CFX-9850(9950)GB PLUS, CFX-9850G PLUS



fx-9750G PLUS

7. Adjust the contrast.

•To adjust the contrast

CFX

- Use ▲ and ▼ to move the pointer to CONTRAST.
- Press ▶ to make the figures on the display darker, and ◀ to make them lighter.

CFX

•To adjust the tint

1. Use ▲ and ▼ to move the pointer to the color you want to adjust (ORANGE, BLUE, or GREEN).
2. Press ▶ to add more green to the color, and ◀ to add more orange.

8. To exit display contrast adjustment, press [MENU].

CFX

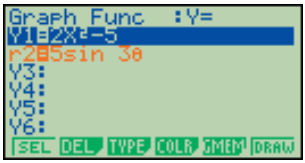
ABOUT THE COLOR DISPLAY

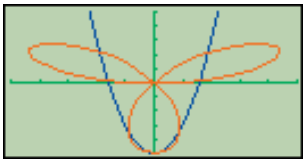
The display uses three colors: orange, blue, and green, to make data easier to understand.

• Main Menu

• Display Color Adjustment

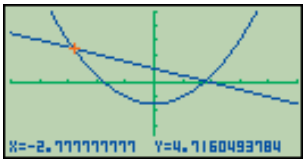
• Graph Function Menu



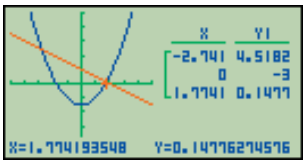


• Graph Display (Example 1)

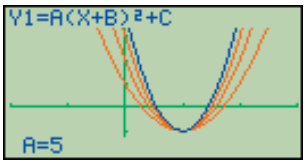
• Graph Display (Example 2)



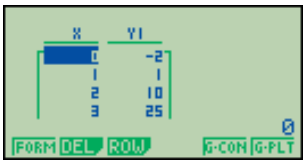
• Graph-To-Table Display



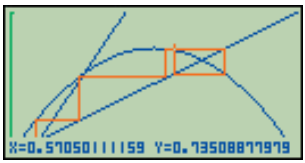
• Dynamic Graph Display



• Table & Graph Numeric Table

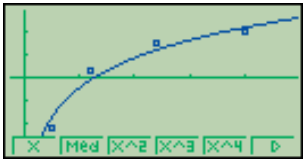


• Recursion Formula Convergence/ Divergence Graph Example



CFX

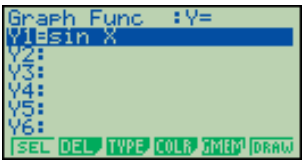
• Statistical Regression Graph Example



- When you draw a graph or run a program, any comment text normally appears on the display in blue. You can, however, change the color of comment text to orange or green.

Example: To draw a sine curve

1. Enter the GRAPH Mode and input the following.



F4

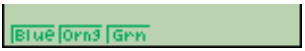
F3 (TYPE) F1 (Y=)

(Specifies rectangular coordinates.)

sin X,θ,T EXE ▲

(Stores the expression.)

2. F4 (COLR)



F2

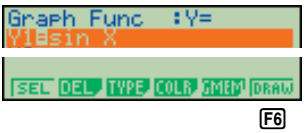
- Press the function key that corresponds to the color you want to use for the graph:

F1 for blue, F2 for orange, F3 for green.

3. F2 (Orng)

(Specifies the graph color.)

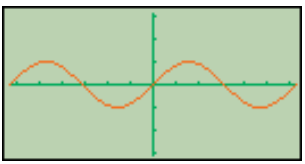
EXIT



F6

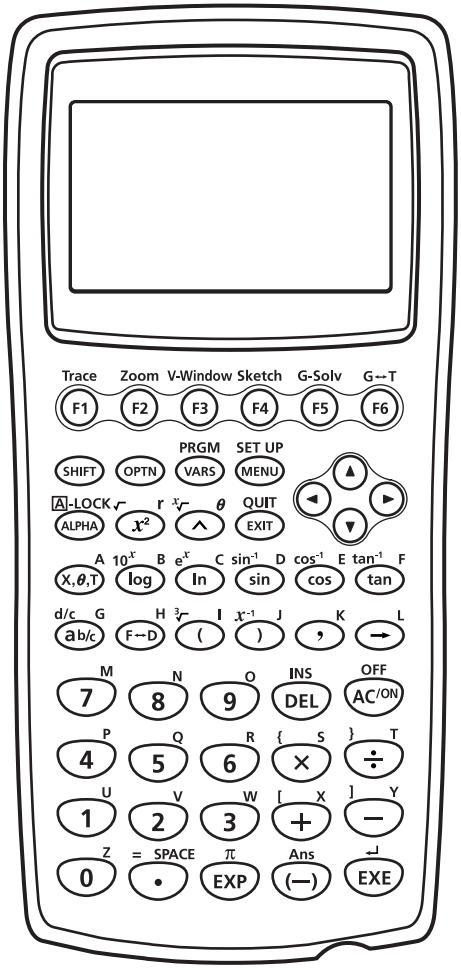
4. F6 (DRAW)

(Draws the graph)



You can also draw multiple graphs of different color on the same screen, making each one distinct and easy to view.

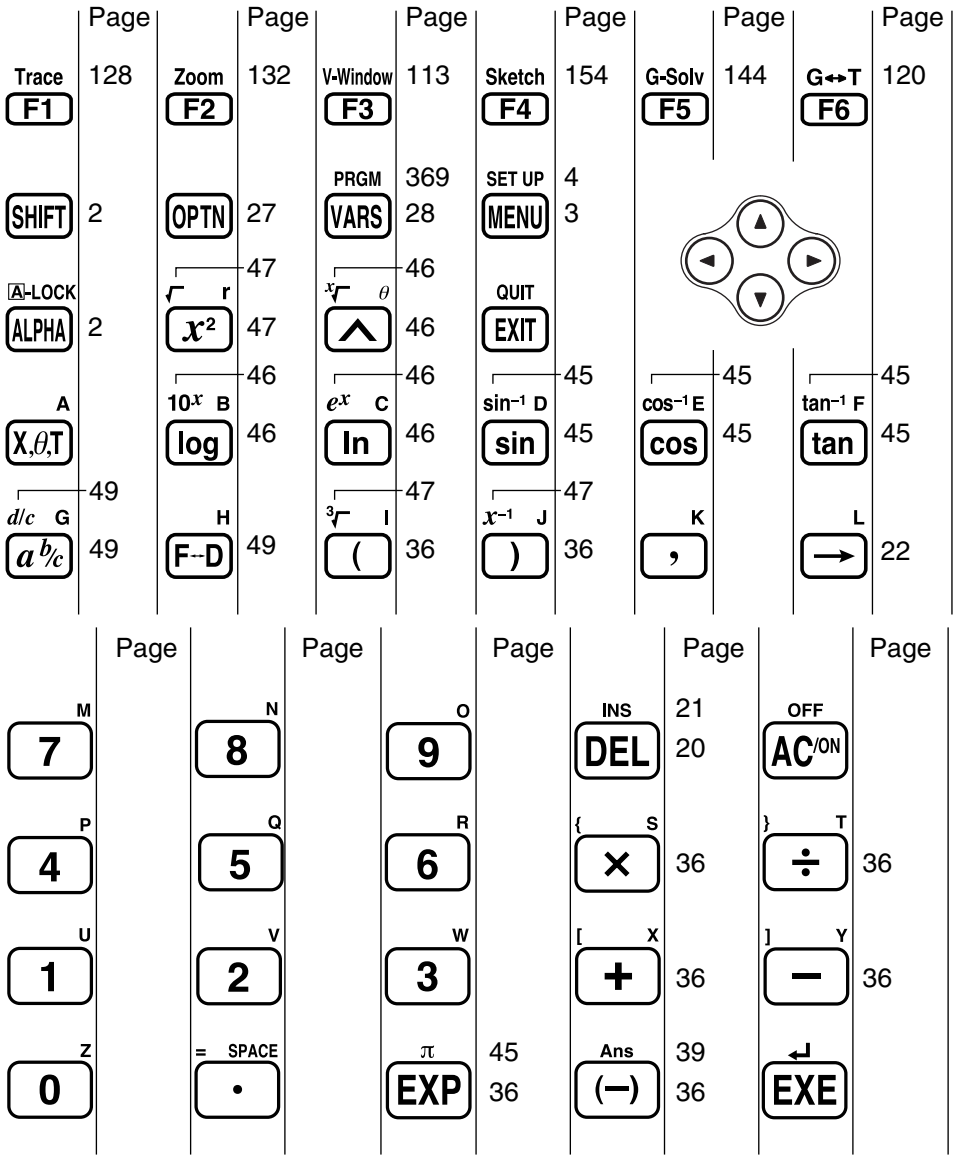
KEYS



Alpha Lock

Normally, once you press [ALPHA] and then a key to input an alphabetic character, the keyboard reverts to its primary functions immediately. If you press [SHIFT] and then [ALPHA], the keyboard locks in alpha input until you press [ALPHA] again.

KEY TABLE


Page
Trace 128
F1
Zoom 132
F2
V-Window 113
F3
Sketch 154
F4
G-Solv 144
F5
G↔T 120
F6
PRGM 369
SET UP 4
SHIFT 2
OPTN 27
VARS 28
MENU 3
47
46
A-LOCK
r
QUIT
ALPHA 2
x² 47
^ 46
EXIT
46
46
45
45
45
A
10^x B
e^x C
sin⁻¹ D
cos⁻¹ E
tan⁻¹ F
X,θ,T
log 46
ln 46
sin 45
cos 45
tan 45
49
47
47
d/c G
H
I
J
K
L
a b/c 49
F↔D 49
(36
) 36
,
→ 22
Page
Page
Page
Page
Page
M
N
O
INS 21
OFF
7
8
9
DEL 20
AC/ON
P
Q
R
{ S
} T
4
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6
× 36
÷ 36
U
V
W
[X
] Y
1
2
3
+ 36
− 36
Z
= SPACE
π 45
Ans 39
0
•
EXP 36
(−) 36
EXE

Quick-Start

Turning Power On And Off
Using Modes
Basic Calculations
Replay Features
Fraction Calculations
Exponents
Graph Functions
Dual Graph
Box Zoom
Dynamic Graph
Table Function

Quick-Start

Welcome to the world of graphing calculators.

Quick-Start is not a complete tutorial, but it takes you through many of the most common functions, from turning the power on, to specifying colors, and on to graphing complex equations. When you're done, you'll have mastered the basic operation of this calculator and will be ready to proceed with the rest of this user's guide to learn the entire spectrum of functions available.

Each step of the examples in Quick-Start is shown graphically to help you follow along quickly and easily. When you need to enter the number 57, for example, we've indicated it as follows:

Press [5] [7]

Whenever necessary, we've included samples of what your screen should look like. If you find that your screen doesn't match the sample, you can restart from the beginning by pressing the "All Clear" button [AC/ON].

TURNING POWER ON AND OFF

To turn power on, press [AC/ON].

To turn power off, press [SHIFT] [AC/ON] (OFF).

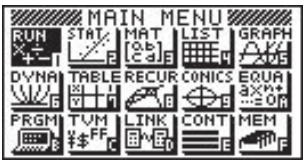
Note that the calculator automatically turns power off if you do not perform any operation for about six minutes (about 60 minutes when a calculation is stopped by an output command (◢)).

USING MODES

This calculator makes it easy to perform a wide range of calculations by simply selecting the appropriate mode. Before getting into actual calculations and operation examples, let's take a look at how to navigate around the modes.

To select the RUN Mode

1. Press [MENU] to display the Main Menu.



* The above shows the CFX-9850 (9950)G(B) PLUS screen.

2. Use ◀ ▶ ▲ ▼ to highlight **RUN** and then press [EXE].

   This is the initial screen of the RUN mode, where you can perform manual calculations, and run programs.

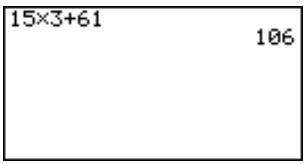
BASIC CALCULATIONS

With manual calculations, you input formulas from left to right, just as they are written on paper. With formulas that include mixed arithmetic operators and parentheses, the calculator automatically applies true algebraic logic to calculate the result.

Example: 15 × 3 + 61

1. Press [AC/ON] to clear the calculator.

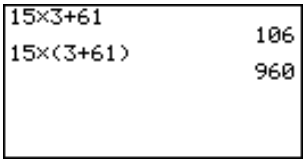
2. Press [1] [5] [×] [3] [+] [6] [1] [EXE].



Parentheses Calculations

Example: 15 × (3 + 61)

1. Press [1] [5] [×] [(] [3] [+] [6] [1] [)] [EXE].



Built-In Functions

This calculator includes a number of built-in scientific functions, including trigonometric and logarithmic functions.

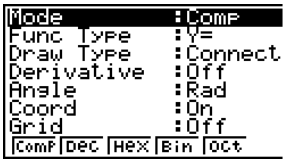
Example: 25 × sin 45°

Important!

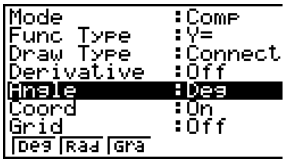
Be sure that you specify Deg (degrees) as the angle unit before you try this example.

Quick-Start

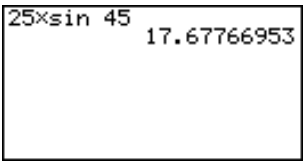
1. Press [AC/ON].
2. Press [SHIFT] [SET UP MENU] to switch the set up display.



3. Press [▼] [▼] [▼] [▼] [F1] (Deg) to specify degrees as the angle unit.



4. Press [EXIT] to clear the menu.
5. Press [AC/ON] to clear the unit.
6. Press [2] [5] [×] [sin] [4] [5] [EXE].



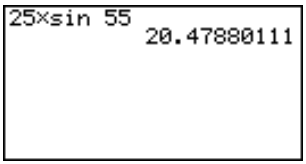
REPLAY FEATURES

With the replay feature, simply press [◀] or [▶] to recall the last calculation that was performed. This recalls the calculation so you can make changes or re-execute it as it is.

Example: To change the calculation in the last example from (25 × sin 45˚) to (25 × sin 55˚)

1. Press [◀] to display the last calculation.
2. Press [◀] twice to move the cursor under the 4.

3. Press [5].
4. Press [EXE] to execute the calculation again.



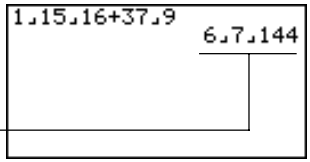
FRACTION CALCULATIONS

You can use the $a\frac{b}{c}$ key to input fractions into calculations. The symbol " ⌟ " is used to separate the various parts of a fraction.

Example: $1\ {}^{15}/_{16} + {}^{37}/_{9}$

1. Press AC/ON.

2. Press 1 $a\frac{b}{c}$ 1 5 $a\frac{b}{c}$ 1 6 + 3 7 $a\frac{b}{c}$ 9 EXE.

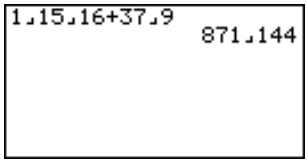


Indicates $6\ {}^{7}/_{144}$

Converting a Mixed Fraction to an Improper Fraction

While a mixed fraction is shown on the display, press SHIFT $a\frac{b}{c}$ (d/c) to convert it to an improper fraction.

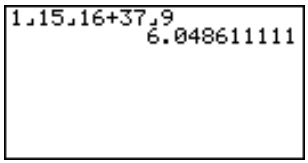
Press SHIFT $a\frac{b}{c}$ (d/c) again to convert back to a mixed fraction.



Converting a Fraction to Its Decimal Equivalent

While a fraction is shown on the display, press F↔D to convert it to its decimal equivalent.

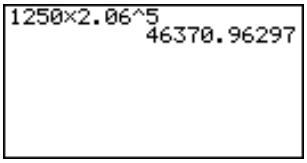
Press F↔D again to convert back to a fraction.



EXPONENTS

Example: 1250×2.06^5

1. Press [AC/ON].
2. Press [1] [2] [5] [0] [×] [2] [•] [0] [6].
3. Press [^] and the **^** indicator appears on the display.
4. Press [5]. The **^5** on the display indicates that 5 is an exponent.
5. Press [EXE].



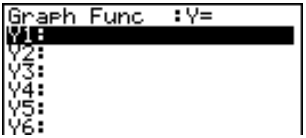
GRAPH FUNCTIONS

The graphing capabilities of this calculator makes it possible to draw complex graphs using either rectangular coordinates (horizontal axis: x ; vertical axis: y) or polar coordinates (angle: θ ; distance from origin: r).

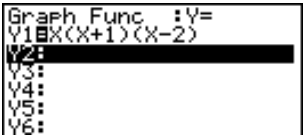
***Example* 1:** To graph Y = X(X + 1)(X – 2)

1. Press [MENU].

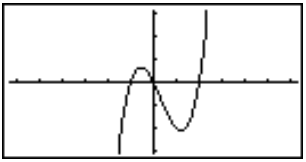
2. Use [◀], [▶], [▲], and [▼] to highlight **GRAPH**, and then press [EXE].



3. Input the formula.
   [X,θ,T] [(] [X,θ,T] [+] [1] [)]
   [(] [X,θ,T] [−] [2] [)] [EXE]

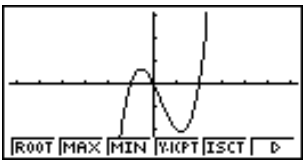


4. Press [F6] (DRAW) or [EXE] to draw the graph.



***Example* 2:** To determine the roots of Y = X(X + 1)(X – 2)

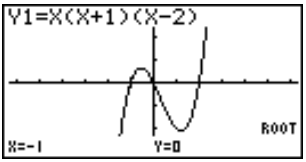
1. Press [SHIFT] [F5] (G-Solv).



[F1]

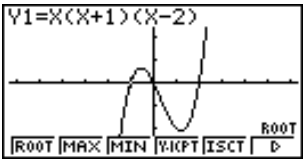
2. Press [F1] (ROOT).

   Press ▶ for other roots.



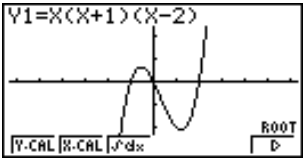
***Example* 3:** Determine the area bounded by the origin and the X = –1 root obtained for Y = X(X + 1)(X – 2)

1. Press [SHIFT] [F5] (G-Solv).



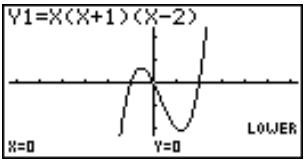
[F6]

2. Press [F6] (▷).

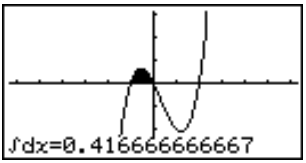


[F3]

3. Press [F3] ($\int dx$).



4. Use ◀ to move the pointer to the location where X = –1, and then press [EXE]. Next, use ▶ to move the pointer to the location where X = 0, and then press [EXE] to input the integration range, which becomes shaded on the display.



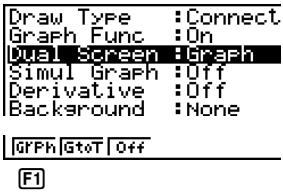
DUAL GRAPH

With this function you can split the display between two areas and display two graphs on the same screen.

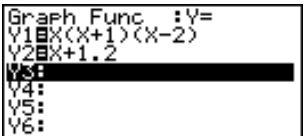
Example: To draw the following two graphs and determine the points of intersection

$$Y1 = X(X + 1)(X - 2)$$
$$Y2 = X + 1.2$$

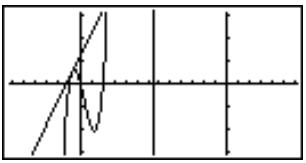
1. Press [SHIFT] [SET UP] [▼] [▼] [F1] (Grph) to specify "Graph" for the Dual Screen setting.



2. Press [EXIT], and then input the two functions.
   [X,θ,T] [(] [X,θ,T] [+] [1] [)]
   [(] [X,θ,T] [−] [2] [)] [EXE]
   [X,θ,T] [+] [1] [•] [2] [EXE]



3. Press [F6] (DRAW) or [EXE] to draw the graphs.

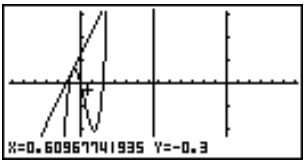


BOX ZOOM

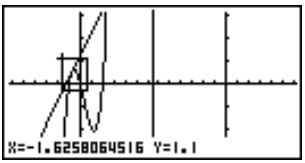
Use the Box Zoom function to specify areas of a graph for enlargement.

1. Press [SHIFT] [F2] (Zoom) [F1] (BOX).

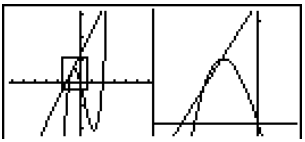
2. Use [◀], [▶], [▲], and [▼] to move the pointer to one corner of the area you want to specify and then press [EXE].



3. Use ◀, ▶, ▲, and ▼ to move the pointer again. As you do, a box appears on the display. Move the pointer so the box encloses the area you want to enlarge.



4. Press EXE, and the enlarged area appears in the inactive (right side) screen.



DYNAMIC GRAPH

Dynamic Graph lets you see how the shape of a graph is affected as the value assigned to one of the coefficients of its function changes.

Example: To draw graphs as the value of coefficient A in the following function changes from 1 to 3

$$Y = AX^2$$

1. Press MENU.

2. Use ◀, ▶, ▲, and ▼ to highlight **DYNA**, and then press EXE.

3. Input the formula.

ALPHA A X,θ,T x^2 EXE

F4

4. Press [F4] (VAR) [1] [EXE] to assign an initial value of 1 to coefficient A.

[F2]

5. Press [F2] (RANG) [1] [EXE] [3] [EXE] [1] [EXE] to specify the range and increment of change in coefficient A.

6. Press [EXIT].

7. Press [F6] (DYNA) to start Dynamic Graph drawing. The graphs are drawn 10 times.

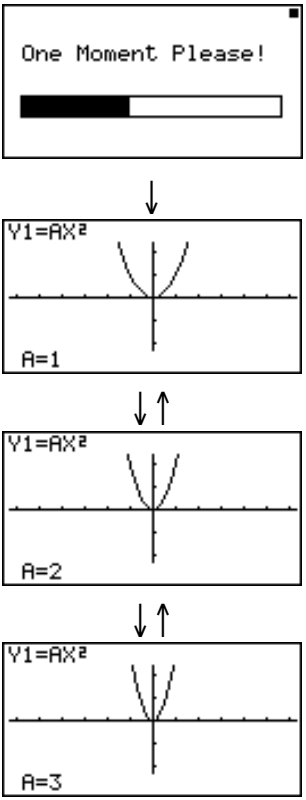


TABLE FUNCTION

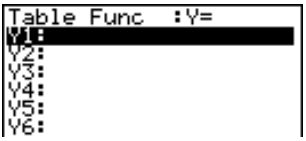
The Table Function makes it possible to generate a table of solutions as different values are assigned to the variables of a function.

Example: To create a number table for the following function

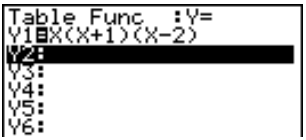
$$Y = X\,(X+1)\,(X-2)$$

1. Press [MENU].

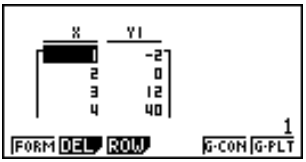
2. Use [◀], [▶], [▲], and [▼] to highlight **TABLE**, and then press [EXE].



3. Input the formula.
   [X,θ,T] [(] [X,θ,T] [+] [1] [)]
   [(] [X,θ,T] [−] [2] [)] [EXE]



4. Press [F6] (TABL) or [EXE] to generate the number table.



To learn all about the many powerful features of this calculator, read on and explore!

Handling Precautions

- Your calculator is made up of precision components. Never try to take it apart.
- Avoid dropping your calculator and subjecting it to strong impact.
- Do not store the calculator or leave it in areas exposed to high temperatures or humidity, or large amounts of dust. When exposed to low temperatures, the calculator may require more time to display results and may even fail to operate. Correct operation will resume once the calculator is brought back to normal temperature.
- The display will go blank and keys will not operate during calculations. When you are operating the keyboard, be sure to watch the display to make sure that all your key operations are being performed correctly.
- Replace the main batteries once every 2 years regardless of how much the calculator is used during that period. Never leave dead batteries in the battery compartment. They can leak and damage the unit.
- Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.
- Avoid using volatile liquids such as thinner or benzine to clean the unit. Wipe it with a soft, dry cloth, or with a cloth that has been dipped in a solution of water and a neutral detergent and wrung out.
- Always be gentle when wiping dust off the display to avoid scratching it.
- In no event will the manufacturer and its suppliers be liable to you or any other person for any damages, expenses, lost profits, lost savings or any other damages arising out of loss of data and/or formulas arising out of malfunction, repairs, or battery replacement. The user should prepare physical records of data to protect against such data loss.
- Never dispose of batteries, the liquid crystal panel, or other components by burning them.
- When the “Low battery!” message appears on the display, replace the main power supply batteries as soon as possible.
- Be sure that the power switch is set to OFF when replacing batteries.
- If the calculator is exposed to a strong electrostatic charge, its memory contents may be damaged or the keys may stop working. In such a case, perform the Reset operation to clear the memory and restore normal key operation.
- If the calculator stops operating correctly for some reason, use a thin, pointed object to press the P button on the back of the calculator. Note, however, that this clears all the data in calculator memory.
- Note that strong vibration or impact during program execution can cause execution to stop or can damage the calculator’s memory contents.
- Using the calculator near a television or radio can cause interference with TV or radio reception.
- Before assuming malfunction of the unit, be sure to carefully reread this user’s guide and ensure that the problem is not due to insufficient battery power, programming or operational errors.

Be sure to keep physical records of all important data!

The large memory capacity of the unit makes it possible to store large amounts of data. You should note, however, that low battery power or incorrect replacement of the batteries that power the unit can cause the data stored in memory to be corrupted or even lost entirely. Stored data can also be affected by strong electrostatic charge or strong impact.

Since this calculator employs unused memory as a work area when performing its internal calculations, an error may occur when there is not enough memory available to perform calculations. To avoid such problems, it is a good idea to leave 1 or 2 kbytes of memory free (unused) at all times.

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