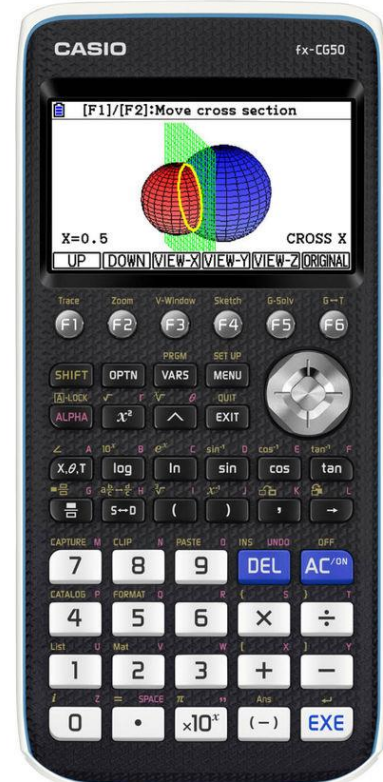


FX CG-50 Overview

- 1- Switch on calculator **AC/ON**
- 2- To activate yellow functions click **SHIFT** then desired key.
- 3- To activate red functions click **ALPHA** then desired key.
- 4- The function keys **F1 F2 F3 F4 F5 F6**
Allow you to access the tab (soft key) menus
That appear at the bottom of the screen.
- 5- The **MENU** key displays every mode the calculator has.
- 6- The **EXIT** key operates like the back arrow on a web browser; it will take you back one screen each time you select it.
- 7- The **EXE** key executes operations.
- 8- Click **OPTN** for more tab menus



Set up FX-CG50

To select how certain commands will be interpreted on screen, log into Setup **SHIFT** **MENU**

1- input/output :

Example: choose **F1** to select Math output for natural display

2- Mode:

Example: choose among **F1** to **F6** for desired number format (Dec,Hex,Bin...)

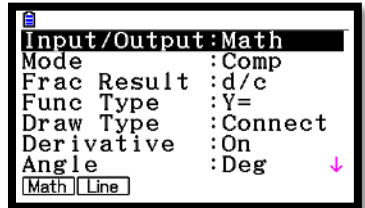
3- Fraction Result : $\frac{d}{c}$ or $a\frac{d}{c}$

4- Function type: Cartesian, parametric

5- Derivative: to show derivative at point using graph

6- Angle: Result will be shown on screen in degrees, radians or gradient.

7- Complex: Result will be shown in rectangular or polar form.



There are also Coordinates, scale, and simplification setup.

Changing color background:

To change background color follow steps

F1 then use arrows to select contrast



Deleting all data from the screen:

1- To delete data in Run Matrix mode:

Follow the steps:

- Make sure the menu tab look like figure-1- if it is not click **EXIT**
- Click the keys **F2 F2 F1**

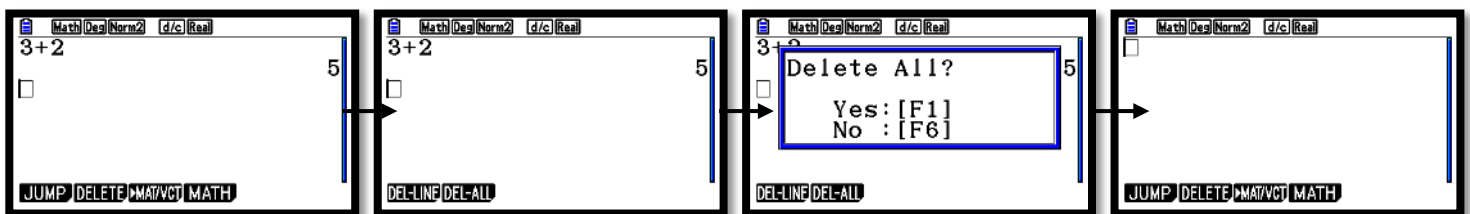


Figure-1-

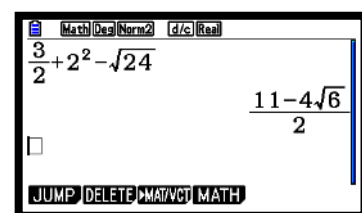
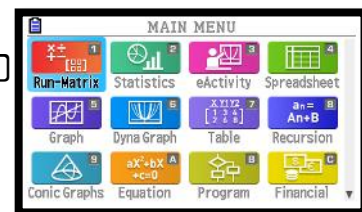
Simplifying numerical expressions:

To simplify numerical expression make sure you are in the Run-Matrix mode **MENU** **1**

Example:

$$\frac{3}{2} + 2^2 - \sqrt{24} =$$

Steps using calculator: **3** **2** **+** **2** **x²** **-** **SHIFT** **x²** **2** **4** **EXE**



Solving Equations:

1- Solving system of Equations (FX-CG50 can solve a system up to 6 unknowns)

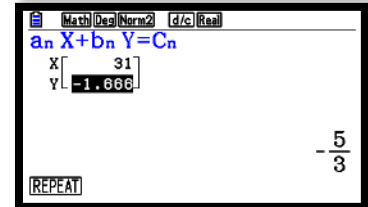
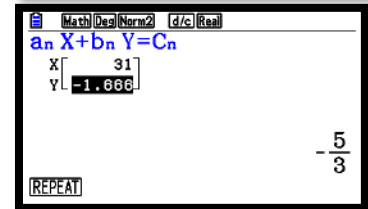
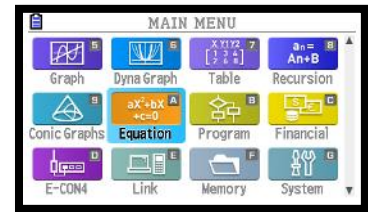
Ex: Solve the below system

$$\begin{cases} 2x + 3y = 57 \\ x + 9y = 16 \end{cases}$$

Steps using FX-CG50:

- Log into equations **MENU** **X,θ,T**
- Choose number of unknowns in this example choose 2 **F1**
- Input coefficients

2 **EXE** **3** **EXE** **5** **7** **EXE** **1** **EXE** **9** **EXE** **1** **6** **EXE** **F1** **▼**



2- Solving polynomial equations (FX-CG50 can solve up to 6) using polynomial equation function

Log into Equations

Then choose **F2** polynomial

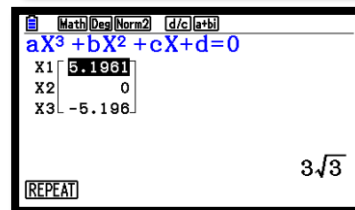
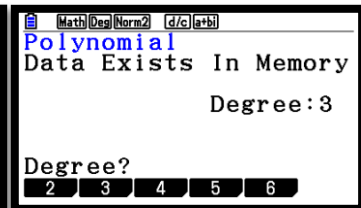
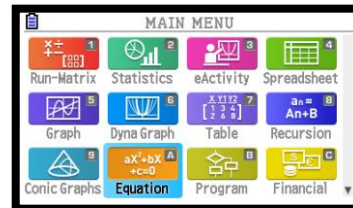
Select desired degree in this example choose **F2**

Solve the below equation:

$$x^3 - 27 = 0$$

Steps using fx-CG50

1 **EXE** **0** **EXE** **-** **2** **7** **EXE** **0** **EXE** **EXE**



3- Solving polynomial equations using SolveN function

Example:

$$(x - 2)(x + 2)(x - 4)(x + 5)(x - 10)(x + 11)(x - 6)(x + 1)(x + 3)(x - 22) = 0$$

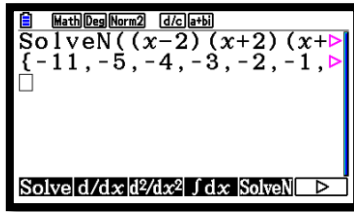
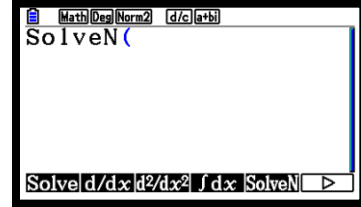
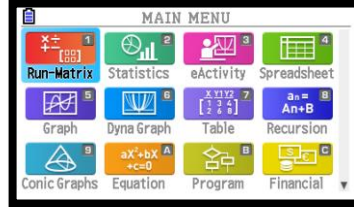
Steps using fx-CG50

Log into Run-Matrix **MENU** **1**

Activate SolveN **OPTN** **F4** **F5**

Type Equation then click **EXE** **EXIT**

All solutions will appear on screen



Note: SolveN function can solve logarithmic, exponential and trigonometric equations...)

Example: Trigonometric equations

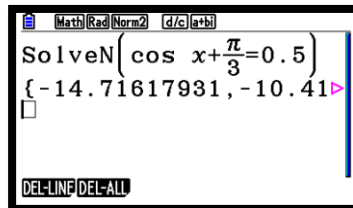
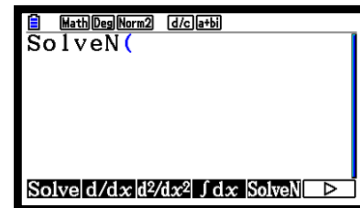
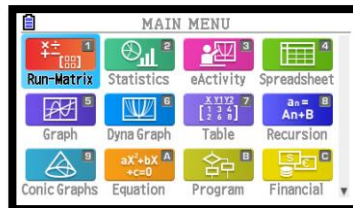
$$\cos\left(x + \frac{\pi}{3}\right) = 0.5$$

Steps using fx-CG50

Log into Run-Matrix **MENU** **1**

Activate SolveN **OPTN** **F4** **F5**

Type Equation then click **EXE** **EXIT**



Graphing:

In Graphing function you can graph, trace, evaluate, calculate area under curve, x-intercept, y-intercept

Roots, y min, xmin

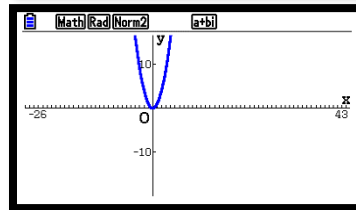
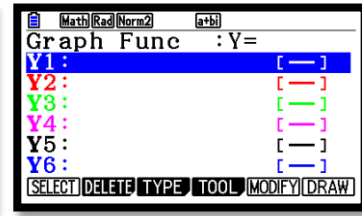
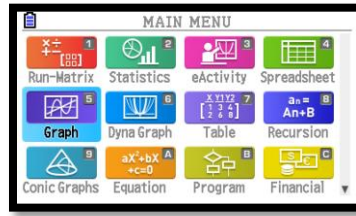
Example: Graph $f(x) = x^2$

Steps using fx-CG50

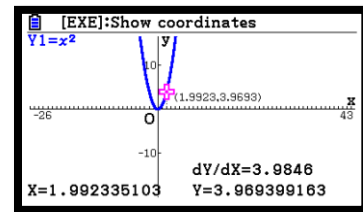
Log into graphing **[MENU]** **[5]**

Type $f(x) = x^2$

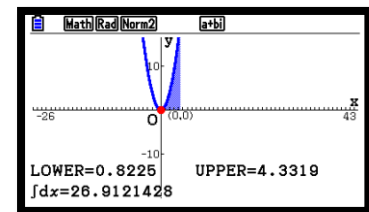
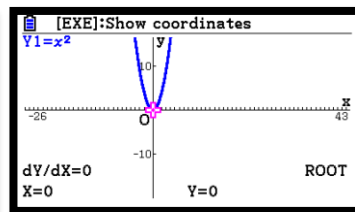
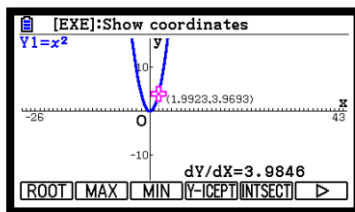
[X,θ,T] **[^]** **[2]** **[EXE]** **[EXE]**



- a) To trace a point on a graph click **[F1]** then move with arrows
In this function you can find y value and derivative at a point



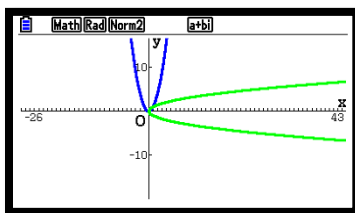
- b) To solve for root, x-intercept, y-intercept, ymin, xmin, evaluate and area use GSOLVE **[F5]**



Click **[F5]** **[F1]** for roots

Click **[F5]** **[F6]** **[F3]** **[F1]** **[EXE]** select lower bound and upper bound then **[EXE]** to find area.

- c) Sketch inverse of the function click **[F4]** **[F4]**

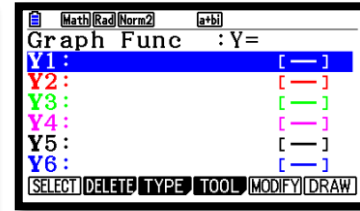
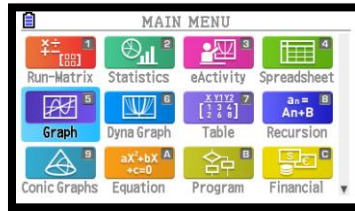


Graphing piecewise functions:

$$F(x) = \begin{cases} x + 4 & x < 3 \\ x^2 - 20 & 4 < x < 7 \end{cases}$$

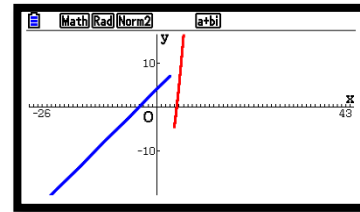
Steps using fx-CG50

Log into graphing **MENU** **5**



Type two functions with specified domain:

X,θ,T **+** **4** **,** **SHIFT** **+** **,** **3** **SHIFT** **-** **EXE** **X,θ,T** **x²** **-** **2** **0** **,**
SHIFT **+** **4** **,** **7** **SHIFT** **-** **EXE** **EXE**

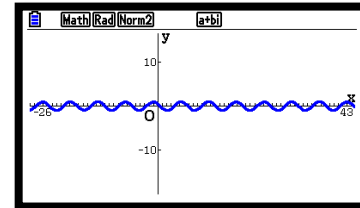


Graphing trigonometric functions:

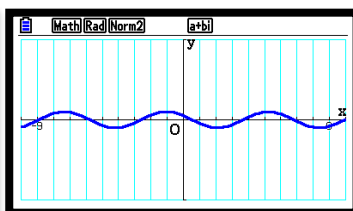
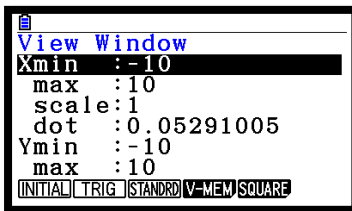
$$f(x) = \cos\left(x + \frac{\pi}{3}\right)$$

Steps using fx-CG50

cos **(** **X,θ,T** **+** **SHIFT** **x10⁻³** **3** **▶** **)** **EXE** **EXE**

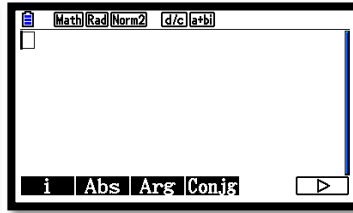
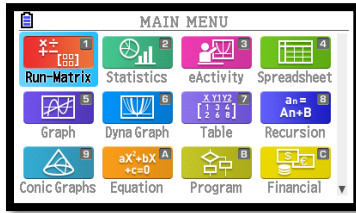


To change window size and axis size click on V-window **F3** then change domain and range then click **EXE** **EXE**



Complex Number

To activate complex number log into Run-Matrix **MENU** **1** **OPTN** **F3**

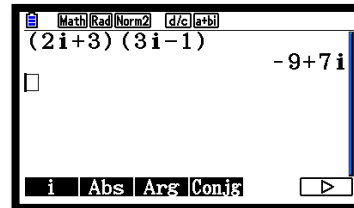


Example:

Simplify $A = (2i + 3)(3i - 1)$

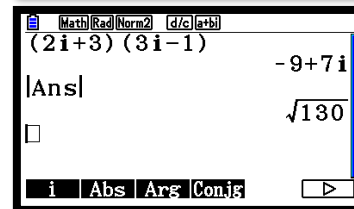
Steps using fx-CG50

(**2** **F1** **+** **3** **)** **(** **3** **F1** **-** **1** **)** **EXE**



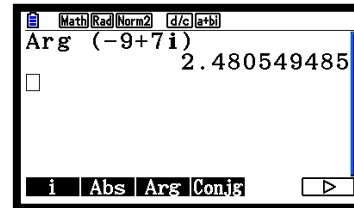
Find modulus of A

F2 **SHIFT** **(←)** **EXE**



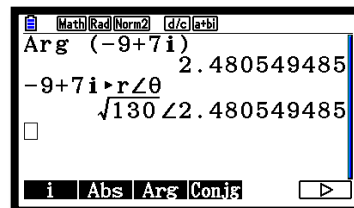
Find Argument of A

F3 **(←)** **-** **9** **+** **7** **F1** **)** **EXE**



Convert to Polar

- **9** **+** **7** **F1** **F6** **F3** **EXE**

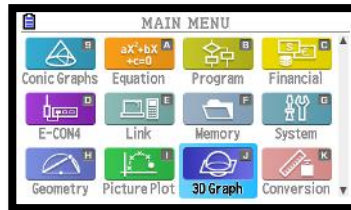


3D Graphing

Application on space subject. How to illustrate the intersection between a line and a plane.

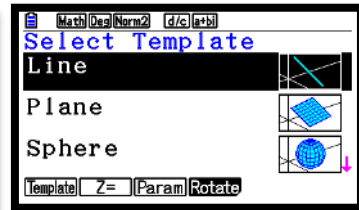
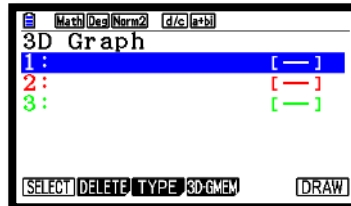
Discuss the intersection between plane $x + y + z + 5 = 0$ and line $\frac{x-2}{4} = \frac{y-3}{5} = \frac{z-1}{6}$

Log into 3D graph **MENU** **3D**



Click **F3** then choose line

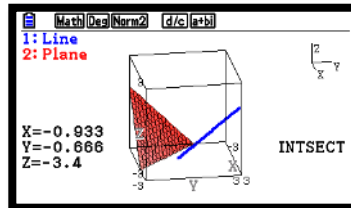
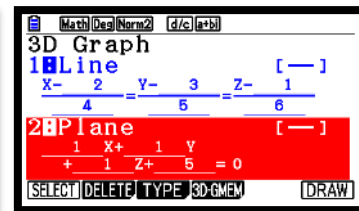
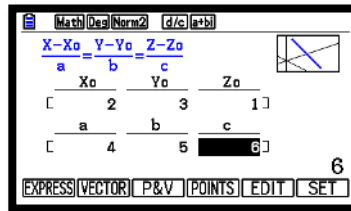
Input data then **EXE**



Move arrow down

Click **F3** then choose plane

Input data then **EXE** **EXE**

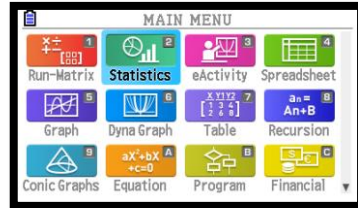


Statistics

Given below data

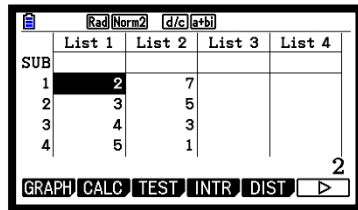
x	2	3	4	5
Frequency	7	5	3	1

Log inti Statistics **MENU** **2**



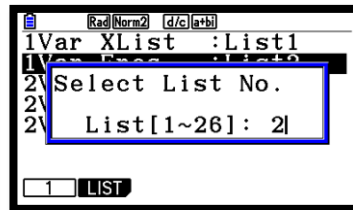
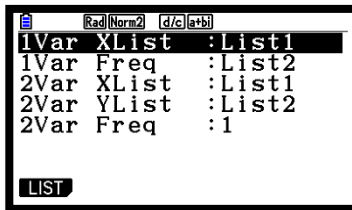
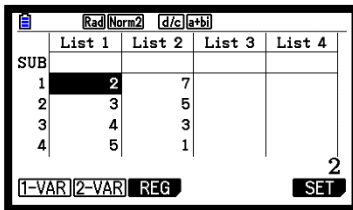
Input x data in list 1

Input Frequency in list 2



To specify that list 2 is frequency change setting of list 2 (Set list 2 as frequency)

Click **F2** **F6** **▼** **F2** **2** **EXE** **EXE**



To calculate statistical central tendency:

EXIT **F2** **F1**

