Skip to content

Manuals+

User Manuals Simplified.

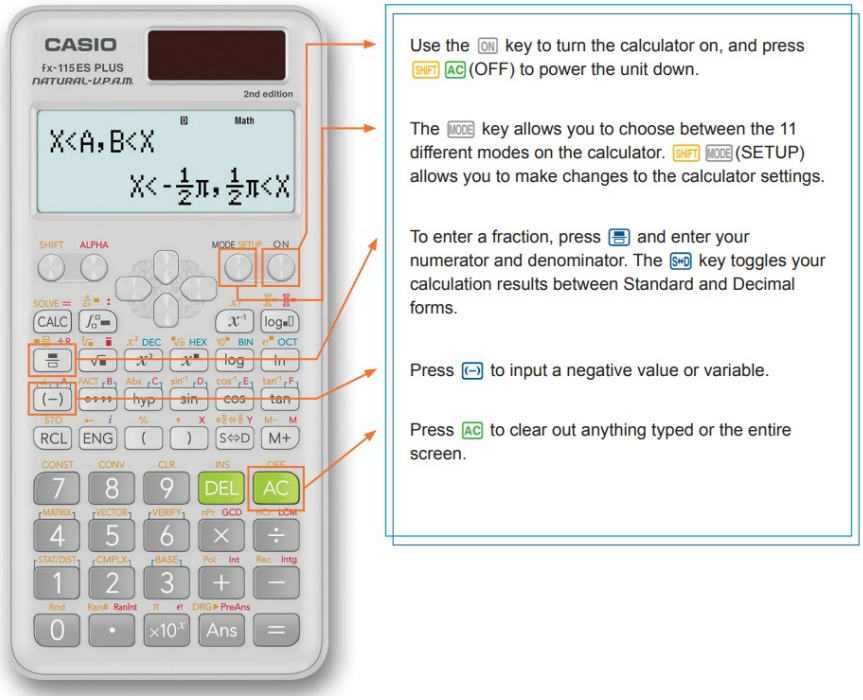
CASIO fx-115ES PLUS User Guide

Home » Casio » CASIO fx-115ES PLUS User Guide

CASIO® **Simply Calculate The Difference!**

QUICK START GUIDE

fx-115ES PLUS
2nd EDITION



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The following explains the meaning of each mode on the fx-115ES Plus 2nd Edition:

MENU NAME	DESCRIPTION
COMP	**This mode performs general** calculations.
COMPLEX	**This mode performs complex number calculations.**
STAT	**This mode performs statistical and regression calculations.**
BASE-N	**This mode performs calculations involving specific number systems (binary, octal, decimal, 8 hexadecimal).**
EON	**This mode solves equations.**
MATRIX	**This mode performs matrix calculations.**
TABLE	**This mode generates a numerical table based on one or two functions.**
VECTOR	**This mode performs vector calculations.**
INFO	**This mode solves inequalities.**
VERIFY	**This mode verifies a calculation.**
DIST	**This mode performs distribution calculations.**

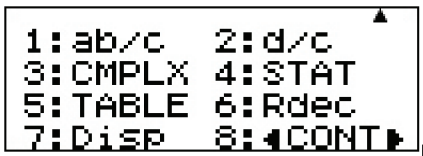
Contents hide

1 COMP MODE
2 STAT MODE
3 EQN MODE
4 TABLE MODE
5 INEQ MODE
6 VERIFY MODE
7 Documents / Resources
7.1 References
8 Related Posts

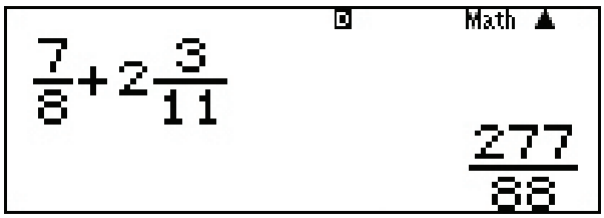
COMP MODE

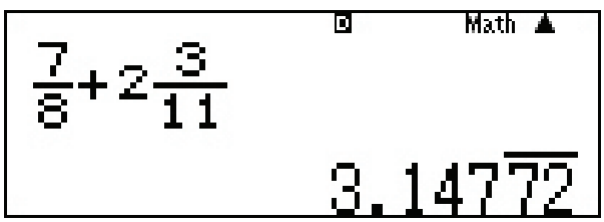
To calculate and solve basic expressions, press MODE 1 to enter COMP mode.

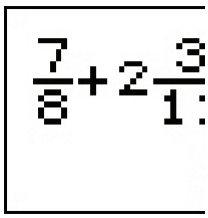
To make any changes to the calculator settings, press SHIFT MODE (SETUP).



Inputting a Fraction & Converting to Decimal Form:





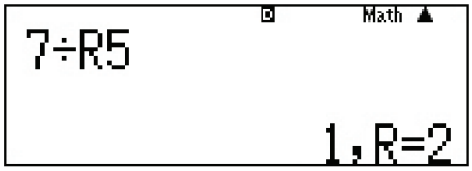


1. To solve $\frac{7}{8}+2\frac{3}{11}$, press [▦] 7 ▶ 8 ▶ + SHIFT [▦] 2 ▶ 3 ▶ 1 1 =.
2. To view the solution as a decimal, press S⇔D.

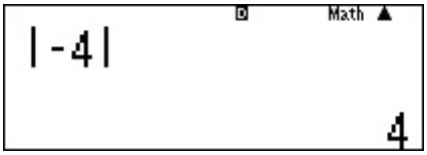
Note: press S⇔D again to see the entire decimal answer. Pressing once more will display the fraction solution again.

To Find the Remainder of a Division Problem:

1. To find the remainder of 7 divided by 5, press 7 ALPHA [▦] 5 =.

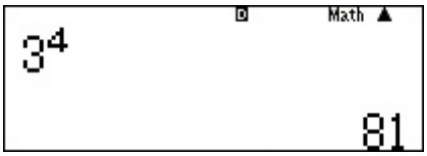


Absolute Value:



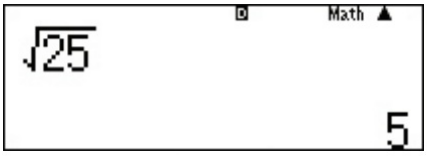
1. To find the absolute value of -4, press SHIFT hyp (−) 4 =.

Exponents:

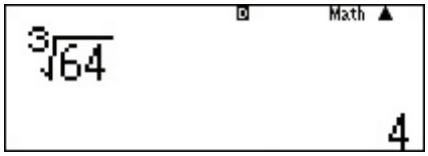


1. To evaluate 3⁄4, press 3 x^n 4 =

Roots:

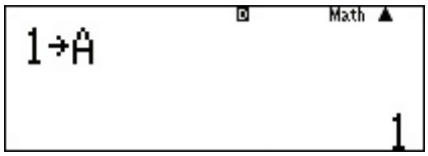


1. To calculate the square root of 25, press √ 2 5 =.



2. To calculate the cube root of 64, press SHIFT x^n 3 ▶ 6 4 =.

Storing Variables:



To store a value for any variable, pres SHIFT RCL followed by a variable, A F. In this example, we will store a value of 1 for the variable A.

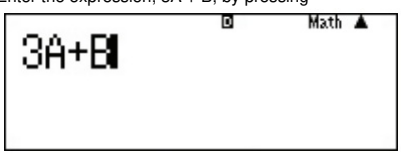
1. Press 1 SHIFT RCL (−).

Note: When you store the value for the variable, you do not need to press the ALPHA key prior to pressing the variable key.

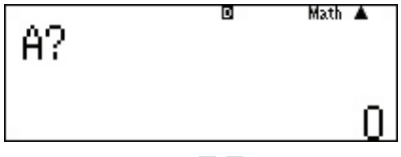
Calculating Expressions:

The CALC key allows you to enter an expression with variables, assign values for each variable and then automatically calculate the expression, without having to store values for the variable first.

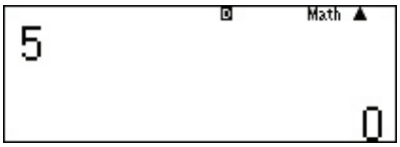
1. Enter the expression, 3A + B, by pressing 3 ALPHA (−) + ALPHA ,.



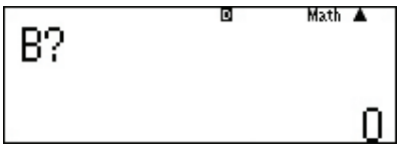
2. Press CALC

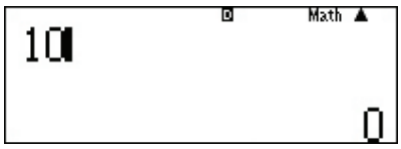


3. Enter 5 for **A** by pressing 5 =

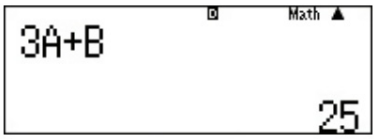


4. Enter 10 for **B** by pressing [1] [0] [=].





5. The values of A and B can be used to solve additional expressions, without using [CALC]

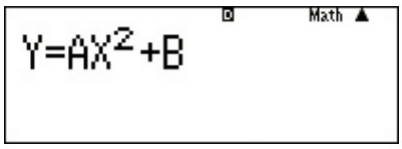


Solving Equations (SOLVE): SOLVE uses Newton's method to approximate the solution of equations. SOLVE can only be used in COMP mode.

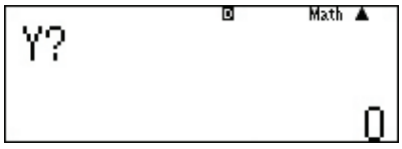
Solve y = ax2 + b for x, when y = 0, a = 1, and b = -2.

1. Enter the equation by pressing

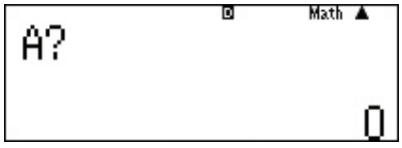
[ALPHA] [S⇔D] (Y)
[ALPHA] [CALC] (=) [ALPHA] [(−)] (A) [ALPHA] [)] (X) [x^2] [+] [ALPHA] [,,,] (B).



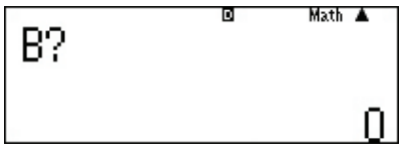
2. Press [SHIFT] [CALC] (SOLVE) to enter the SOLVE feature.
3. Enter the value for **y** by pressing [0] [=].



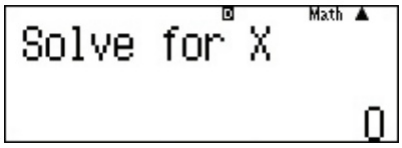
4. Enter the value for **a** by pressing [1] [=].



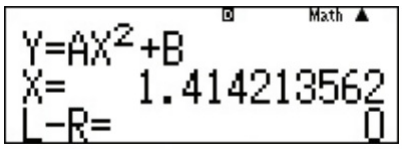
5. Enter the value of b by pressing



6. Enter an initial value for x, for this example, we will enter 1, by pressing [1] [=].



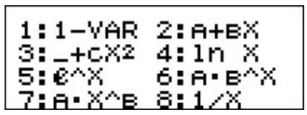
7. To exit SOLVE, press [AC].



STAT MODE

To start a statistical calculation, press [MODE] [3] to enter STAT mode and use the screen that appears to select the type of calculation you want to perform.

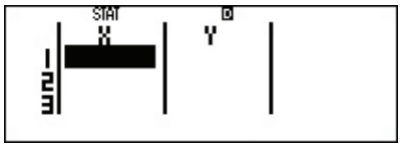
Note: When you want to change the calculation type after entering STAT mode, press [SHIFT] [1] (STAT/DIST)**1**(Type) to display the calculation type selection screen.



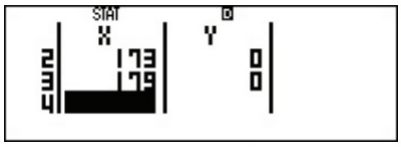
Input the following data and find the linear regression.
(170, 66) (173, 68) (179, 75)

Entering Data:

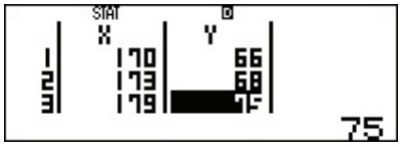
1. To enter the data points above, press MODE 3 2 (A+BX).



2. Enter the x-values first, pressing = after each value. 1 7 0 = 1 7 3 = 1 7 9 =

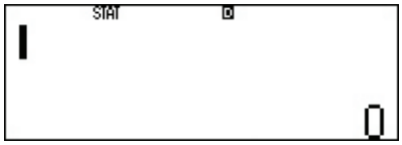


3. Use the arrows to move to the top of the y-column and enter the y-values, pressing = after each value. 6 6 = 6 8 = 7 5 =



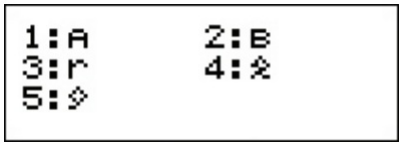
Finding a Regression:

1. To find the regression equation, press AC to clear the screen.

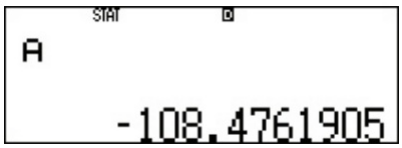


2. Press SHIFT 1 to display the Statistics Menu.

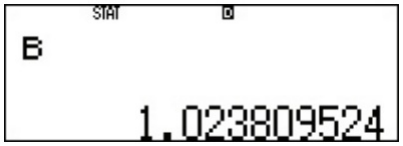
3. Press **5** (Reg) to find the coefficients for the linear regression equation.



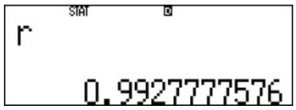
4. Press **1** (A) = to find the value of **A**.

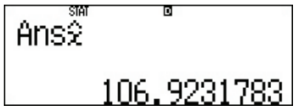


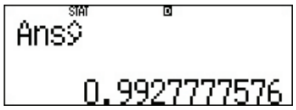
5. To find the value of **B,** repeat the process. Press SHIFT 1 5 2 (B) =.



6. The values of the correlation coefficient (r), the estimated value of X, and the estimated value of Y can also be found.







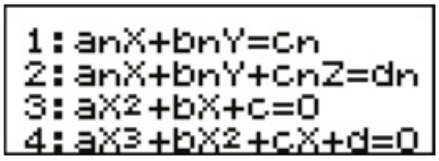
EQN MODE

Equation Mode can be used to solve simultaneous linear equations with two or three unknowns, quadratic equations, or cubic equations. Press MODE 5 to enters EQN mode and press the

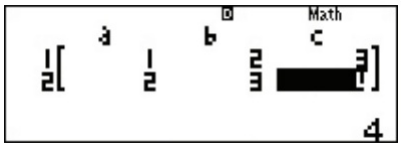
corresponding number for the desired equation type.

Example 1: $\begin{cases} x + 2y = 3 \\ 2x + 3y = 4 \end{cases}$

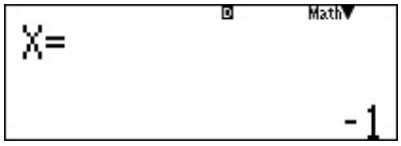
1. Press **1** to select a simultaneous linear equation with two unknowns.



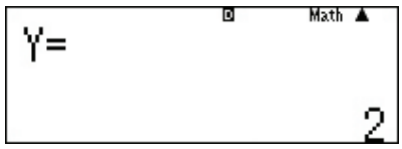
2. Enter the coefficients for each term in each equation by pressing [1] [=] [2] [=] [3] [=] [2] [=] [3] [=] [4] [=].



3. Press [=] to solves for the variables.



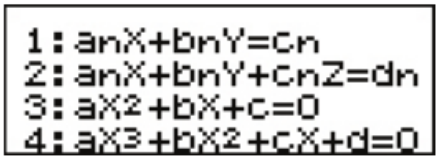
4. Press [▼] to see the solution for y.



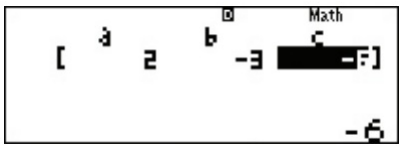
5. To solve additional simultaneous equations with two unknowns, press [AC] [AC]

Example 2: Solve 2×2 3x 6 = 0.

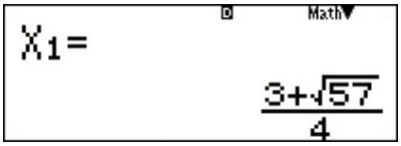
1. To choose a different type of equation to solve, press [MODE] [5] to return to the initial Equation screen.

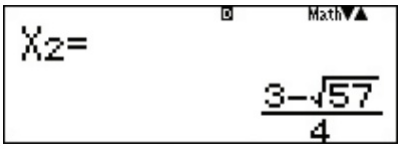


2. Press **3** to select a quadratic equation.



3. Enter the coefficients of each term and the constant by pressing [2] [=] [(−)] [3] [=] [(−)] [6] [=].





4. Press [=] to solves for the roots and the minimum.

5. Press [▼] to see the additional information

TABLE MODE

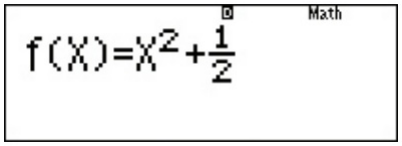
TABLE generates a number table based on one or two functions, entered as f(x) and/or g(x). Press MODE 7 to enter TABLE mode.

Note: Be sure to input the x variable (ALPHA)when generating a number table. All other variables will be handled as constants.

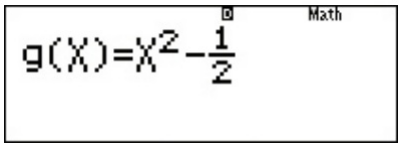
$f(x) = x^2 + \frac{1}{2}$

$g(x) = x^2 - \frac{1}{2}$ for the domain -1 ≤ x ≤ 1, by step of 0.5

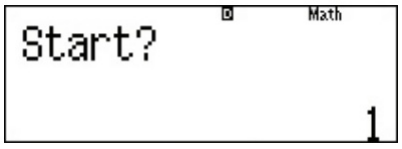
1. Enter the first function by pressing ALPHA x^2 + 1 ▶ 2 =.

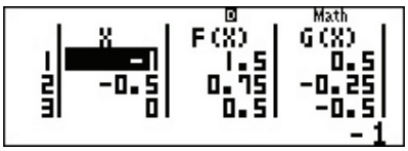


2. Enter the second function by pressing ALPHA x^2 − 1 ▶ 2 =.



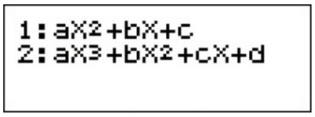
3. Enter the Start, End, and Step values by pressing (−) 1 = 1 = . 5 =.





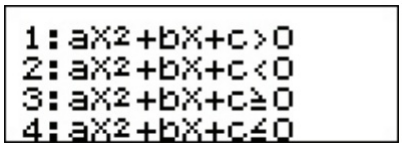
INEQ MODE

INEQ Mode allows you to solve a quadratic inequality or a cubic inequality. Press MODE ▼ 1 to enter INEQ Mode and select quadratic or cubic.

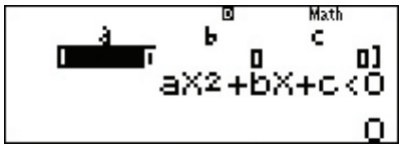


Solve x2 + 2x 3 < 0:

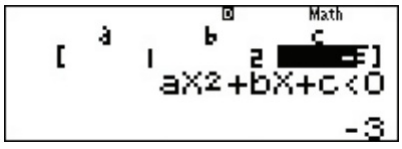
1. Press **1** to select a quadratic inequality.



2. Press **2** to select the less than inequality.



3. Enter the coefficients of each term and the constant by pressing 1 = 2 = (−) 3 =.

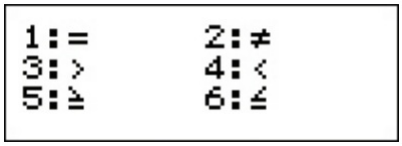


4. Press = to display the solution set.

VERIFY MODE

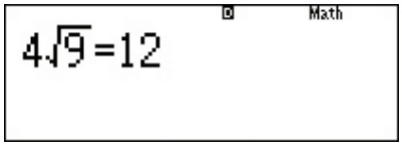
VERIFY Mode allows you to verify whether input equality or inequality is true or false. Press MODE ▼ 2 to enter VERIFY Mode.

Note: Pressing SHIFT 6 will bring up a menu of equality or inequality symbols to use.

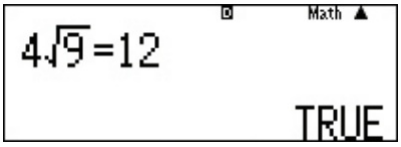


Verify whether 4√9=12 is true or false:

1. Enter the equation by pressing 4 √ 9 ▶ SHIFT 6 1 1 2.



2. Press = to sees if the statement is true or false.



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