

Order of Operations

Calculations are performed in the following order of precedence.

- ① Coordinate transformation: Pol (x, y), Rec (r, θ)
 - ② Type A functions:
With these functions, the value is entered and then the function key is pressed.
 $x^3, x^2, x^{-1}, x!, o^{\circ}$
 $\hat{x}, \hat{x}_1, \hat{x}_2, \hat{y}$
Angle unit conversions (DRG▶)
 - ③ Powers and roots: $\wedge(x^y), \sqrt[x]{y}$
 - ④ a^b/c
 - ⑤ Abbreviated multiplication format in front of π, e (natural logarithm base), memory name, or variable name: $2\pi, 3e, 5A, \pi A$, etc.
 - ⑥ Type B functions:
With these functions, the function key is pressed and then the value is entered.
 $\sqrt{\quad}, \sqrt[3]{\quad}, \log, \ln, e^x, 10^x, \sin, \cos, \tan, \sin^{-1}, \cos^{-1}, \tan^{-1}, \sinh, \cosh, \tanh, \sinh^{-1}, \cosh^{-1}, \tanh^{-1}, (-)$
 - ⑦ Abbreviated multiplication format in front of Type B functions: $2\sqrt{3}, A\log 2$, etc.
 - ⑧ Permutation and combination: nPr, nCr
 - ⑨ \times, \div
 - ⑩ $+, -$
- Operations of the same precedence are performed from right to left. $e^{\ln \sqrt{120}} \rightarrow e^{\ln(\sqrt{120})}$
 - Other operations are performed from left to right.
 - Operations enclosed in parentheses are performed first.
 - When a calculation contains an argument that is a negative number, the negative number must be enclosed within parentheses. The negative sign ($-$) is treated as a Type B function, so particular care is required when the calculation includes a high-priority Type A function, or power or root operations.

Example: $(-2)^4 = 16$

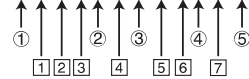
$$-2^4 = -16$$

Stacks

This calculator uses memory areas, called "stacks," to temporarily store values (numeric stack) and commands (command stack) according to their precedence during calculations. The numeric stack has 10 levels and the command stack has 24 levels. A stack error (Stack ERROR) occurs whenever you try to perform a calculation that is so complex that the capacity of a stack is exceeded.

Example:

$$2 \times ((3 + 4 \times (5 + 4) \div 3) \div 5) + 8 =$$



Numeric Stack Command Stack

Numeric Stack	Command Stack
① 2	① ×
② 3	② (
③ 4	③ (
④ 5	④ +
⑤ 4	⑤ ×
⋮	⑥ (
	⑦ +
	⋮

- Calculations are performed in sequence according to "Order of Operations." Commands and values are deleted from the stack as the calculation is performed.

Input Ranges

Internal digits: 12

Accuracy*: As a rule, accuracy is ± 1 at the 10th digit.

Functions	Input Range
sin x	DEG $0 \leq x \leq 4.499999999 \times 10^{10}$
	RAD $0 \leq x \leq 785398163.3$
	GRA $0 \leq x \leq 4.999999999 \times 10^{10}$
cos x	DEG $0 \leq x \leq 4.500000008 \times 10^{10}$
	RAD $0 \leq x \leq 785398164.9$
	GRA $0 \leq x \leq 5.000000009 \times 10^{10}$
tan x	DEG Same as sin x, except when $ x = (2n-1) \times 90$.
	RAD Same as sin x, except when $ x = (2n-1) \times \pi/2$.
	GRA Same as sin x, except when $ x = (2n-1) \times 100$.
$\sin^{-1}x$	$0 \leq x \leq 1$
$\cos^{-1}x$	$0 \leq x \leq 9.999999999 \times 10^{99}$
$\tan^{-1}x$	$0 \leq x \leq 9.999999999 \times 10^{99}$
sinh x	$0 \leq x \leq 230.2585092$
cosh x	$0 \leq x \leq 4.999999999 \times 10^{99}$
$\sinh^{-1}x$	$1 \leq x \leq 4.999999999 \times 10^{99}$
$\cosh^{-1}x$	$0 \leq x \leq 9.999999999 \times 10^{99}$
tanh x	$0 \leq x \leq 9.999999999 \times 10^{-1}$
$\tanh^{-1}x$	$0 < x \leq 9.999999999 \times 10^{99}$
$\log x / \ln x$	$-9.999999999 \times 10^{99} \leq x \leq 99.99999999$
10^x	$-9.999999999 \times 10^{99} \leq x \leq 230.2585092$
e^x	$0 \leq x < 1 \times 10^{100}$
\sqrt{x}	$ x < 1 \times 10^{50}$
x^2	$ x < 1 \times 10^{100}; x \neq 0$
$1/x$	$ x < 1 \times 10^{100}; x \neq 0$
$\sqrt[3]{x}$	$ x < 1 \times 10^{100}$
x!	$0 \leq x \leq 69$ (x is an integer)
nPr	$0 \leq n < 1 \times 10^{10}, 0 \leq r \leq n$ (n, r are integers) $1 \leq \{n!(n-r)!\} < 1 \times 10^{100}$

Functions	Input Range
nCr	$0 \leq n < 1 \times 10^{10}, 0 \leq r \leq n$ (n, r are integers) $1 \leq \{n!(n-r)!\} < 1 \times 10^{100}$
Pol(x, y)	$ x , y \leq 9.999999999 \times 10^{49}$ $(x^2 + y^2) \leq 9.999999999 \times 10^{99}$
Rec(r, θ)	$0 \leq r \leq 9.999999999 \times 10^{99}$ θ : Same as sin x
o°	$ a , b, c < 1 \times 10^{100}$ $0 \leq b, c$
$\frac{\circ}{\circ}$	Decimal \leftrightarrow Sexagesimal Conversions $0^{\circ}0'0'' \leq x \leq 999999^{\circ}59'$
$\wedge(x^y)$	$x > 0: -1 \times 10^{100} < y \log x < 100$ $x = 0: y > 0$ $x < 0: y = n, \frac{1}{2n+1}$ (n is an integer) However: $-1 \times 10^{100} < y \log x < 100$
$\sqrt[x]{y}$	$y > 0: x \neq 0$ $-1 \times 10^{100} < 1/x \log y < 100$ $y = 0: x > 0$ $y < 0: x = 2n+1, \frac{1}{n}$ (n \neq 0; n is an integer) However: $-1 \times 10^{100} < 1/x \log y < 100$
a^b/c	Total of integer, numerator, and denominator must be 10 digits or less (including division marks).
SD (REG)	$ x < 1 \times 10^{50}$ $x\sigma n, y\sigma n, \bar{x}, \bar{y}: n \neq 0$ $ y < 1 \times 10^{50}$ $x\sigma n-1, y\sigma n-1, A, B, r:$ $ n < 1 \times 10^{100}$ $n \neq 0, 1$

- * For a single calculation, calculation error is ± 1 at the 10th digit. (In the case of exponential display, calculation error is ± 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 $\wedge(x^y), \sqrt[x]{y}, x!, \sqrt[3]{\quad}, nPr, nCr$, etc.) In the vicinity of a function's singular point and point of inflection, errors are cumulative and may become large.

Power Supply

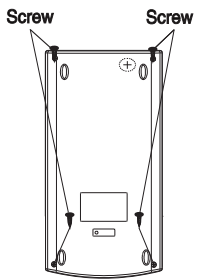
Solar cell and a single LR44 Type button battery.

Replacing the Battery

- Either of the following symptoms indicates battery power is low, and that the battery should be replaced.
- Display figures are dim and difficult to read in areas where there is little light available.
- Nothing appears on the display when you press the \square key.

To replace the battery

- ① Remove the four screws that hold the back cover in place and then remove the back cover.
- ② Remove the old battery.
- ③ Wipe off the sides of new battery with a dry, soft cloth. Load it into the unit with the positive \oplus side facing up (so you can see it).
- ④ Replace the back cover and secure it in place with the four screws.
- ⑤ Press \square to turn power on. Be sure not to skip this step.



Auto Power Off

Calculator power automatically turns off if you do not perform any operation for about six minutes. When this happens, press \square to turn power back on.