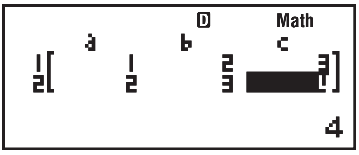
EQN Mode Calculation Examples

$x + 2y = 3,\ 2x + 3y = 4$

[MODE] [5] (EQN) [1] ($a_nX + b_nY = c_n$)

1 [=] 2 [=] 3 [=]

2 [=] 3 [=] 4 [=]



[=] (X=) –1

[▼] (Y=) 2

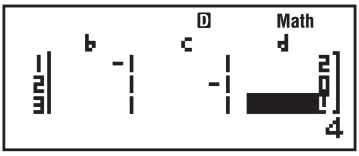
$x - y + z = 2,\ x + y - z = 0,\ -x + y + z = 4$

[MODE] [5] (EQN) [2] ($a_nX + b_nY + c_nZ = d_n$)

1 [=] [(–)] 1 [=] 1 [=] 2 [=]

1 [=] 1 [=] [(–)] 1 [=] 0 [=]

[(–)] 1 [=] 1 [=] 1 [=] 4 [=]



[=] (X=) 1

[▼] (Y=) 2

[▼] (Z=) 3

$x^2 + x + \frac{3}{4} = 0$ **MATH**

[MODE] [5] (EQN) [3] ($aX^2 + bX + c = 0$)

1 [=] 1 [=] 3 [$\frac{\blacksquare}{\square}$] 4 [=] [=] (X1=) $-\frac{1}{2} + \frac{\sqrt{2}}{2}i$

[▼] (X2=) $-\frac{1}{2} - \frac{\sqrt{2}}{2}i$

$x^2 - 2\sqrt{2}x + 2 = 0$ **MATH**

[MODE] [5] (EQN) [3] ($aX^2 + bX + c = 0$)

1 [=] [(–)] 2 [$\sqrt{\blacksquare}$] 2 [)] [=] 2 [=] [=] (X=) $\sqrt{2}$

$x^3 - 2x^2 - x + 2 = 0$

[MODE] [5] (EQN) [4] ($aX^3 + bX^2 + cX + d = 0$)

1 [=] [(–)] 2 [=] [(–)] 1 [=] 2 [=] [=] (X1=) –1

[▼] (X2=) 2

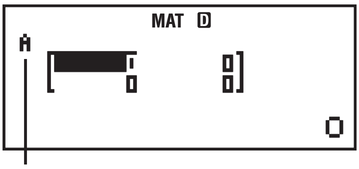
[▼] (X3=) 1

Matrix Calculations (MATRIX)

Use the MATRIX Mode to perform calculations involving matrices of up to 3 rows by 3 columns. To perform a matrix calculation, you first assign data to special matrix variables (MatA, MatB, MatC), and then use the variables in the calculation as shown in the example below.

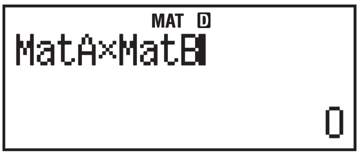
1 To assign $\begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$ to MatA and $\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ to MatB, and then perform the following calculations: $\begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix} \times \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ (MatA×MatB), $\begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix} + \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ (MatA+MatB)

1. Press MODE 6 (MATRIX) to enter the MATRIX Mode.
2. Press 1 (MatA) 5 (2×2).
   - This will display the Matrix Editor for input of the elements of the 2 × 2 matrix you specified for MatA.

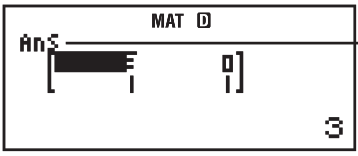


"A" stands for "MatA".

3. Input the elements of MatA: 2 = 1 = 1 = 1 =.
4. Perform the following key operation: SHIFT 4 (MATRIX) 2 (Data) 2 (MatB) 5 (2×2).
   - This will display the Matrix Editor for input of the elements of the 2 × 2 matrix you specified for MatB.
5. Input the elements of MatB: 2 = (−) 1 = (−) 1 = 2 =.
6. Press AC to advance to the calculation screen, and perform the first calculation (MatA×MatB): SHIFT 4 (MATRIX) 3 (MatA) × SHIFT 4 (MATRIX) 4 (MatB) =.
   - This will display the MatAns screen with the calculation results.



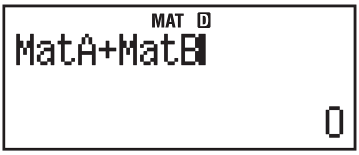
→



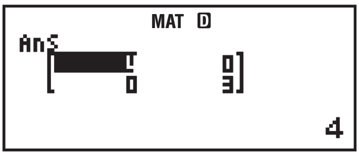
"Ans" stands for "MatAns".

Note: "MatAns" stands for "Matrix Answer Memory". See "Matrix Answer Memory" for more information.

7. Perform the next calculation (MatA+MatB): AC SHIFT 4 (MATRIX) 3 (MatA) + SHIFT 4 (MATRIX) 4 (MatB) =.



→



Matrix Answer Memory

Whenever the result of a calculation executed in the MATRIX Mode is a matrix, the MatAns screen will appear with the result. The result also will be assigned to a variable named "MatAns".

The MatAns variable can be used in calculations as described below.

- To insert the MatAns variable into a calculation, perform the following key operation: SHIFT 4 (MATRIX) 6 (MatAns).
- Pressing any one of the following keys while the MatAns screen is displayed will switch automatically to the calculation screen: +, −, ×, ÷, x^{-1}, x^2, SHIFT x^2 (x^3). The calculation screen will show the MatAns variable followed by the operator or function for the key you pressed.

Assigning and Editing Matrix Variable Data

Important: The following operations are not supported by the Matrix Editor: M+, SHIFT M+ (M–), SHIFT RCL (STO). Pol, Rec, and multi-statements also cannot be input with the Matrix Editor.

To assign new data to a matrix variable:

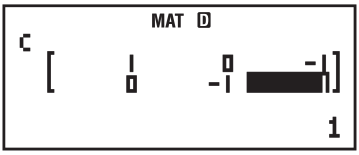
1. Press SHIFT 4 (MATRIX) 1 (Dim), and then, on the menu that appears, select the matrix variable to which you want to assign data.
2. On the next menu that appears, select dimension (m×n).

3. Use the Matrix Editor that appears to input the elements of the matrix.

---

2 To assign $\begin{bmatrix} 1 & 0 & -1 \\ 0 & -1 & 1 \end{bmatrix}$ to MatC

[SHIFT] [4] (MATRIX)
[1] (Dim) [3] (MatC) [4] (2×3)
1 [=] 0 [=] [(-)] 1 [=] 0 [=] [(-)] 1 [=] 1 [=]



To edit the elements of a matrix variable:

1. Press [SHIFT] [4] (MATRIX) [2] (Data), and then, on the menu that appears, select the matrix variable you want to edit.
2. Use the Matrix Editor that appears to edit the elements of the matrix.
   - Move the cursor to the cell that contains the element you want to change, input the new value, and then press [=].

To copy matrix variable (or MatAns) contents:

1. Use the Matrix Editor to display the matrix you want to copy.
   - If you want to copy MatA, for example, perform the following key operation: [SHIFT] [4] (MATRIX) [2] (Data) [1] (MatA).
   - If you want to copy MatAns contents, perform the following to display the MatAns screen: [AC] [SHIFT] [4] (MATRIX) [6] (MatAns) [=].
2. Press [SHIFT] [RCL] (STO), and then perform one of the following key operations to specify the copy destination: [(-)] (MatA), [°'''] (MatB), or [hyp] (MatC).
   - This will display the Matrix Editor with the contents of the copy destination.

Matrix Calculation Examples

The following examples use MatA = $\begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$ and MatB = $\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ from 1, and MatC = $\begin{bmatrix} 1 & 0 & -1 \\ 0 & -1 & 1 \end{bmatrix}$ from 2. You can input a matrix variable into a key operation by pressing [SHIFT] [4] (MATRIX) and then pressing one of the following number keys: [3] (MatA), [4] (MatB), [5] (MatC).

---

3 3 × MatA (Matrix scalar multiplication).

[AC] 3 [×] **MatA** [=]

---

4 Obtain the determinant of MatA (det(MatA)).

[AC] [SHIFT] [4] (MATRIX) [7] (det) **MatA** [)] [=]

1

---

5 Obtain the transposition of MatC (Trn(MatC)).

[AC] [SHIFT] [4] (MATRIX) [8] (Trn) **MatC** [)] [=]

---

6 Obtain the inverse matrix of MatA (MatA^{-1}).

Note: You cannot use [$x^{■}$] for this input. Use the [x^{-1}] key to input "$^{-1}$".

[AC] **MatA** [x^{-1}] [=]

---

7 Obtain the absolute value of each element of MatB (Abs(MatB)).

[AC] [SHIFT] [hyp] (Abs) **MatB** [)] [=]

8 Determine the square and cube of MatA (MatA², MatA³).

Note: You cannot use [$x^{\blacksquare}$] for this input. Use [x^2] to specify squaring, and [SHIFT] [x^2] (x^3) to specify cubing.

[AC] **MatA** [x^2] [=]

[AC] **MatA** [SHIFT] [x^2] (x^3) [=]

Creating a Number Table from a Function (TABLE)

TABLE generates a number table for x and $f(x)$ using an input $f(x)$ function. Perform the following steps to generate a number table.

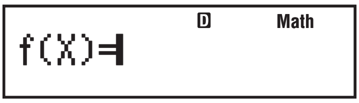
1. Press [MODE] [7] (TABLE) to enter the TABLE Mode.
2. Input a function in the format $f(x)$, using the X variable.
   - Be sure to input the X variable ([ALPHA] [)] (X)) when generating a number table. Any variable other than X is handled as a constant.
   - The following cannot be used in the function: Pol, Rec, ∫, d/dx, Σ.
3. In response to the prompts that appear, input the values you want to use, pressing [=] after each one.

For this prompt:	**Input this:**
Start?	Input the lower limit of X (Default = 1).
End?	Input the upper limit of X (Default = 5). **Note:** Make sure that the End value is always greater than the Start value.
Step?	Input the increment step (Default = 1). **Note:** The Step specifies by how much the Start value should be sequentially incremented as the number table is generated. If you specify Start = 1 and Step = 1, X sequentially will be assigned the values 1, 2, 3, 4, and so on to generate the number table until the End value is reached.

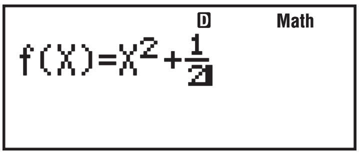
- Inputting the Step value and pressing [=] generates and displays the number table in accordance with the parameters you specified.
- Pressing [AC] while the number table screen is displayed will return to the function input screen in step 2.

To generate a number table for the function $f(x) = x^2 + \frac{1}{2}$ for the range $-1 \leqq x \leqq 1$, incremented in steps of 0.5 **MATH**

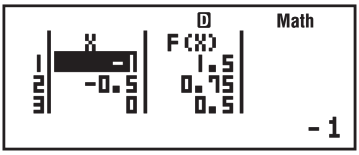
[MODE] [7] (TABLE)



[ALPHA] [)] (X) [x²] [+] 1 [▭] 2



[=] [(–)] 1 [=] 1 [=] 0.5 [=]



Note: • You can use the number table screen for viewing values only. Table contents cannot be edited. • The number table generation operation causes the contents of variable X to be changed.

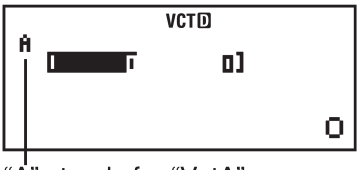
Important: The function you input for number table generation is deleted whenever you display the setup menu in the TABLE Mode and switch between Natural Display and Linear Display.

Vector Calculations (VECTOR)

Use the VECTOR Mode to perform 2-dimensional and 3-dimensional vector calculations. To perform a vector calculation, you first assign data to special vector variables (VctA, VctB, VctC), and then use the variables in the calculation as shown in the example below.

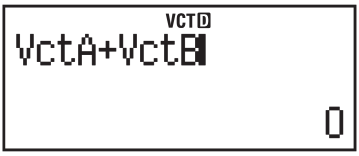
1 To assign (1, 2) to VctA and (3, 4) to VctB, and then perform the following calculation: (1, 2) + (3, 4)

1. Press [MODE] [8] (VECTOR) to enter the VECTOR Mode.
2. Press [1] (VctA) [2] (2).
   • This will display the Vector Editor for input of the 2-dimensional vector for VctA.

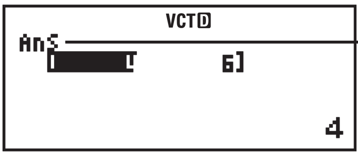


"A" stands for "VctA".

3. Input the elements of VctA: 1 [=] 2 [=].
4. Perform the following key operation: [SHIFT] [5] (VECTOR) [2] (Data) [2] (VctB) [2] (2).
   • This will display the Vector Editor for input of the 2-dimensional vector for VctB.
5. Input the elements of VctB: 3 [=] 4 [=].
6. Press [AC] to advance to the calculation screen, and perform the calculation (VctA + VctB): [SHIFT] [5] (VECTOR) [3] (VctA) [+] [SHIFT] [5] (VECTOR) [4] (VctB) [=].
   • This will display the VctAns screen with the calculation results.



→



"Ans" stands for "VctAns".

Note: "VctAns" stands for "Vector Answer Memory". See "Vector Answer Memory" for more information.

Vector Answer Memory

Whenever the result of a calculation executed in the VECTOR Mode is a vector, the VctAns screen will appear with the result. The result also will be assigned to a variable named “VctAns”.

The VctAns variable can be used in calculations as described below.

- To insert the VctAns variable into a calculation, perform the following key operation: [SHIFT] [5] (VECTOR) [6] (VctAns).
- Pressing any one of the following keys while the VctAns screen is displayed will switch automatically to the calculation screen: [+], [−], [×], [÷]. The calculation screen will show the VctAns variable followed by the operator for the key you pressed.

Assigning and Editing Vector Variable Data

Important: The following operations are not supported by the Vector Editor: [M+], [SHIFT] [M+] (M–), [SHIFT] [RCL] (STO). Pol, Rec, and multi-statements also cannot be input with the Vector Editor.

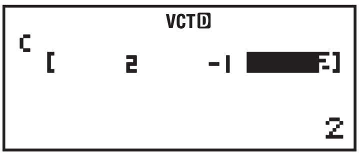
To assign new data to a vector variable:

1. Press [SHIFT] [5] (VECTOR) [1] (Dim), and then, on the menu that appears, select the vector variable to which you want to assign data.
2. On the next menu that appears, select dimension (m).
3. Use the Vector Editor that appears to input the elements of the vector.

---

2 To assign (2, –1, 2) to VctC

[SHIFT] [5] (VECTOR) [1] (Dim) [3] (VctC) [1] (3)
2 [=] [(−)] 1 [=] 2 [=]



To edit the elements of a vector variable:

1. Press [SHIFT] [5] (VECTOR) [2] (Data), and then, on the menu that appears, select the vector variable you want to edit.
2. Use the Vector Editor that appears to edit the elements of the vector.
   - Move the cursor to the cell that contains the element you want to change, input the new value, and then press [=].

To copy vector variable (or VctAns) contents:

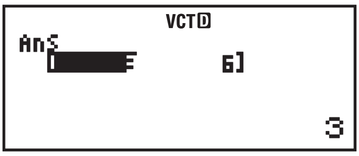
1. Use the Vector Editor to display the vector you want to copy.
   - If you want to copy VctA, for example, perform the following key operation: [SHIFT] [5] (VECTOR) [2] (Data) [1] (VctA).
   - If you want to copy VctAns contents, perform the following to display the VctAns screen: [AC] [SHIFT] [5] (VECTOR) [6] (VctAns) [=].
2. Press [SHIFT] [RCL] (STO), and then perform one of the following key operations to specify the copy destination: [(−)] (VctA), [°’’’] (VctB), or [hyp] (VctC).
   - This will display the Vector Editor with the contents of the copy destination.

Vector Calculation Examples

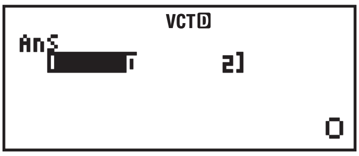
The following examples use VctA = (1, 2) and VctB = (3, 4) from 1, and VctC = (2, –1, 2) from 2. You can input a vector variable into a key operation by pressing [SHIFT] [5] (VECTOR) and then pressing one of the following number keys: [3] (VctA), [4] (VctB), [5] (VctC).

3. 3 × VctA (Vector scalar multiplication), 3 × VctA – VctB (Calculation example using VctAns)

[AC] 3 [×] **VctA** [=]

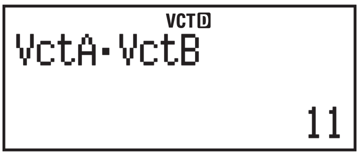


[–] **VctB** [=]



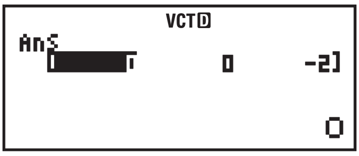
4. VctA • VctB (Vector dot product)

[AC] **VctA** [SHIFT] [5] (VECTOR) [7] (Dot) **VctB** [=]



5. VctA × VctB (Vector cross product)

[AC] **VctA** [×] **VctB** [=]



6. Obtain the absolute values of VctC.

[AC] [SHIFT] [hyp] (Abs) **VctC** [)] [=]

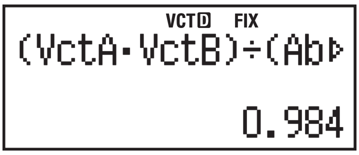
7. Determine the angle formed by VctA and VctB to three decimal places (Fix 3). **Deg**

(cos $\theta = \dfrac{(A \bullet B)}{|A||B|}$, which becomes $\theta = \cos^{-1} \dfrac{(A \bullet B)}{|A||B|}$)

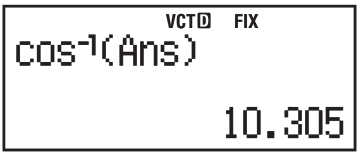
[SHIFT] [MODE] (SETUP) [6] (Fix) [3]

[AC] [(] **VctA** [SHIFT] [5] (VECTOR) [7] (Dot) **VctB** [)] [÷]

[(] [SHIFT] [hyp] (Abs) **VctA** [)] [SHIFT] [hyp] (Abs) **VctB** [)] [)] [=]



[SHIFT] [cos] ($\cos^{-1}$) [Ans] [)] [=]



Scientific Constants

Your calculator comes with 40 built-in scientific constants that can be used in any mode besides BASE-N. Each scientific constant is displayed as a unique symbol (such as π), which can be used inside of calculations.

To input a scientific constant into a calculation, press [SHIFT] [7] (CONST) and then input the two-digit number that corresponds to the constant you want.

To input the scientific constant C_0 (speed of light in a vacuum), and display its value

AC SHIFT 7 (CONST)

```
CONSTANT
Number 01~40?
              [__]
```

2 8 (C_0) =

```
                D   Math ▲
Co
         299792458
```

To calculate $C_0 = \frac{1}{\sqrt{\varepsilon_0 \mu_0}}$ **MATH**

AC ▭ 1 ▼ √▭ SHIFT 7 (CONST) 3 2 (ε_0) SHIFT 7 (CONST) 3 3 (μ_0) =

```
                D   Math ▲
   1
√ε0μ0
         299792458
```

The following shows the two-digit numbers for each of the scientific constants.

01: (mp) proton mass	02: (mn) neutron mass
03: (me) electron mass	04: (mμ) muon mass
05: (a_0) Bohr radius	06: (h) Planck constant
07: (μN) nuclear magneton	08: (μB) Bohr magneton
09: ($\hbar$) Planck constant, rationalized	10: (α) fine-structure constant
11: (re) classical electron radius	12: (λc) Compton wavelength
13: (γp) proton gyromagnetic ratio	14: (λcp) proton Compton wavelength
15: (λcn) neutron Compton wavelength	16: (R_∞) Rydberg constant
17: (u) atomic mass constant	18: (μp) proton magnetic moment
19: (μe) electron magnetic moment	20: (μn) neutron magnetic moment
21: ($\mu\mu$) muon magnetic moment	22: (F) Faraday constant
23: (e) elementary charge	24: (NA) Avogadro constant
25: (k) Boltzmann constant	26: (Vm) molar volume of ideal gas
27: (R) molar gas constant	28: (C_0) speed of light in vacuum
29: (C_1) first radiation constant	30: (C_2) second radiation constant
31: (σ) Stefan-Boltzmann constant	32: (ε_0) electric constant

33: (μ_0) magnetic constant	34: (ϕ_0) magnetic flux quantum
35: (g) standard acceleration of gravity	36: (G_0) conductance quantum
37: (Z_0) characteristic impedance of vacuum	38: (t) Celsius temperature
39: (G) Newtonian constant of gravitation	40: (atm) standard atmosphere

The values are based on CODATA recommended values (March 2007).

Metric Conversion

The calculator's built-in metric conversion commands make it simple to convert values from one unit to another. You can use the metric conversion commands in any calculation mode except for BASE-N and TABLE.

To input a metric conversion command into a calculation, press [SHIFT] [8] (CONV) and then input the two-digit number that corresponds to the command you want.

To convert 5 cm into inches **LINE**

[AC] 5 [SHIFT] [8] (CONV)

```
CONVERSION
Number 01~40?
                [__]
```

[0] [2] (cm▶in) [=]

```
                 D      ▲
5cm▶in
             1.968503937
```

To convert 100 g into ounces **LINE**

[AC] 100 [SHIFT] [8] (CONV) [2] [2] (g▶oz) [=]

```
                 D      ▲
100g▶oz
             3.527396584
```

To convert –31°C into Fahrenheit **LINE**

[AC] [(–)] 31 [SHIFT] [8] (CONV) [3] [8] (°C▶°F) [=]

```
                 D      ▲
-31°C▶°F
                   -23.8
```

The following shows the two-digit numbers for each of the metric conversion commands.

01: in ▶ cm	02: cm ▶ in	03: ft ▶ m	04: m ▶ ft
05: yd ▶ m	06: m ▶ yd	07: mile ▶ km	08: km ▶ mile
09: n mile ▶ m	10: m ▶ n mile	11: acre ▶ m^2	12: m^2 ▶ acre
13: gal (US) ▶ ℓ	14: ℓ ▶ gal (US)	15: gal (UK) ▶ ℓ	16: ℓ ▶ gal (UK)
17: pc ▶ km	18: km ▶ pc	19: km/h ▶ m/s	20: m/s ▶ km/h
21: oz ▶ g	22: g ▶ oz	23: lb ▶ kg	24: kg ▶ lb

25: atm ▶ Pa	26: Pa ▶ atm	27: mmHg ▶ Pa	28: Pa ▶ mmHg
29: hp ▶ kW	30: kW ▶ hp	31: kgf/cm^2 ▶ Pa	32: Pa ▶ kgf/cm^2
33: kgf • m ▶ J	34: J ▶ kgf • m	35: lbf/in^2 ▶ kPa	36: kPa ▶ lbf/in^2
37: °F ▶ °C	38: °C ▶ °F	39: J ▶ cal	40: cal ▶ J

Conversion formula data is based on the "NIST Special Publication 811 (1995)".

Note: The J▶cal command performs conversion for values at a temperature of 15°C.

Calculation Ranges, Number of Digits, and Precision

The calculation range, number of digits used for internal calculation, and calculation precision depend on the type of calculation you are performing.

Calculation Range and Precision

Calculation Range	$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ or 0
Number of Digits for Internal Calculation	15 digits
Precision	In general, ±1 at the 10th digit for a single calculation. Precision for exponential display is ±1 at the least significant digit. Errors are cumulative in the case of consecutive calculations.

Function Calculation Input Ranges and Precision

Functions	Input Range	
sin$x$	DEG	$0 \leqq \lvert x \rvert < 9 \times 10^9$
	RAD	$0 \leqq \lvert x \rvert < 157079632.7$
	GRA	$0 \leqq \lvert x \rvert < 1 \times 10^{10}$
cos$x$	DEG	$0 \leqq \lvert x \rvert < 9 \times 10^9$
	RAD	$0 \leqq \lvert x \rvert < 157079632.7$
	GRA	$0 \leqq \lvert x \rvert < 1 \times 10^{10}$
tan$x$	DEG	Same as sin$x$, except when $\lvert x \rvert = (2n-1) \times 90$.
	RAD	Same as sin$x$, except when $\lvert x \rvert = (2n-1) \times \pi/2$.
	GRA	Same as sin$x$, except when $\lvert x \rvert = (2n-1) \times 100$.
$\sin^{-1}x$	$0 \leqq \lvert x \rvert \leqq 1$	
$\cos^{-1}x$		
$\tan^{-1}x$	$0 \leqq \lvert x \rvert \leqq 9.999999999 \times 10^{99}$	
sinh$x$	$0 \leqq \lvert x \rvert \leqq 230.2585092$	
cosh$x$		
$\sinh^{-1}x$	$0 \leqq \lvert x \rvert \leqq 4.999999999 \times 10^{99}$	
$\cosh^{-1}x$	$1 \leqq x \leqq 4.999999999 \times 10^{99}$	
tanh$x$	$0 \leqq \lvert x \rvert \leqq 9.999999999 \times 10^{99}$	
$\tanh^{-1}x$	$0 \leqq \lvert x \rvert \leqq 9.999999999 \times 10^{-1}$	

$\log x/\ln x$	$0 < x \leqq 9.999999999 \times 10^{99}$
10^x	$-9.999999999 \times 10^{99} \leqq x \leqq 99.99999999$
e^x	$-9.999999999 \times 10^{99} \leqq x \leqq 230.2585092$
$\sqrt{x}$	$0 \leqq x < 1 \times 10^{100}$
x^2	$\lvert x \rvert < 1 \times 10^{50}$
x^{-1}	$\lvert x \rvert < 1 \times 10^{100}$; $x \neq 0$
$\sqrt[3]{x}$	$\lvert x \rvert < 1 \times 10^{100}$
$x!$	$0 \leqq x \leqq 69$ (x is an integer)
$n\mathrm{P}r$	$0 \leqq n < 1 \times 10^{10}$, $0 \leqq r \leqq n$ (n, r are integers) $1 \leqq \{n!/(n-r)!\} < 1 \times 10^{100}$
$n\mathrm{C}r$	$0 \leqq n < 1 \times 10^{10}$, $0 \leqq r \leqq n$ (n, r are integers) $1 \leqq n!/r! < 1 \times 10^{100}$ or $1 \leqq n!/(n-r)! < 1 \times 10^{100}$
Pol(x, y)	$\lvert x \rvert, \lvert y \rvert \leqq 9.999999999 \times 10^{99}$ $\sqrt{x^2+y^2} \leqq 9.999999999 \times 10^{99}$
Rec(r, θ)	$0 \leqq r \leqq 9.999999999 \times 10^{99}$ θ: Same as sin$x$
°’ ”	$\lvert a \rvert, b, c < 1 \times 10^{100}$; $0 \leqq b, c$ The display seconds value is subject to an error of ±1 at the second decimal place.
$\overleftarrow{\text{°’ ”}}$	$\lvert x \rvert < 1 \times 10^{100}$ Decimal ↔ Sexagesimal Conversions $0°0´0˝ \leqq \lvert x \rvert \leqq 9999999°59´59˝$
x^y	$x > 0$: $-1 \times 10^{100} < y\log x < 100$ $x = 0$: $y > 0$ $x < 0$: $y = n, \dfrac{m}{2n+1}$ (m, n are integers) However: $-1 \times 10^{100} < y\log \lvert x \rvert < 100$
$\sqrt[x]{y}$	$y > 0$: $x \neq 0$, $-1 \times 10^{100} < 1/x \log y < 100$ $y = 0$: $x > 0$ $y < 0$: $x = 2n+1, \dfrac{2n+1}{m}$ ($m \neq 0$; m, n are integers) However: $-1 \times 10^{100} < 1/x \log \lvert y \rvert < 100$
$a^b/_c$	Total of integer, numerator, and denominator must be 10 digits or less (including division marks).
RanInt#(a, b)	$a < b$; $\lvert a \rvert, \lvert b \rvert < 1 \times 10^{10}$; $b - a < 1 \times 10^{10}$

- Precision is basically the same as that described under “Calculation Range and Precision”, above.
- x^y, $\sqrt[x]{y}$, $\sqrt[3]{\ }$, $x!$, $n\mathrm{P}r$, $n\mathrm{C}r$ type functions require consecutive internal calculation, which can cause accumulation of errors that occur with each calculation.
- Error is cumulative and tends to be large in the vicinity of a function’s singular point and inflection point.
- The range for calculation results that can be displayed in π form when using Natural Display is $\lvert x \rvert < 10^6$. Note, however, that internal calculation error can make it impossible to display some calculation results in π form. It also can cause calculation results that should be in decimal form to appear in π form.