

# Tkinter Calculator

Scientific calculator using Python's library Tkinter



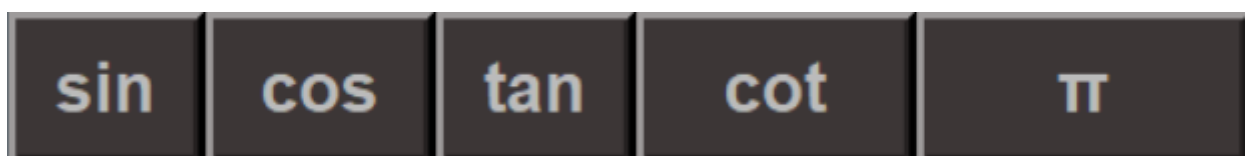
Some explanations for each button and the function which represents are the following :

- **1st Row**



1. **abs** : The absolute value of a number (e.g.  $\text{abs}(-5) = 5$ ).
2. **mod** : From *modulo*. it's the operation to find the remainder of the division of one number by another.  
In python we use the symbol % (e.g.  $5 \bmod 2 = 5 \% 2 = 1$ ).
3. **div** : Floor division returns the result of the division rounded down to the nearest integer.  
In python we use the symbol // (e.g.  $8 \text{div} 3 = 8 // 3 = 2$ ).
4. **x!** : The factorial of the number x (e.g.  $4! = 24$ ).
5. **e** : The Euler's number. A mathematical constant approximately equal to 2.71828.

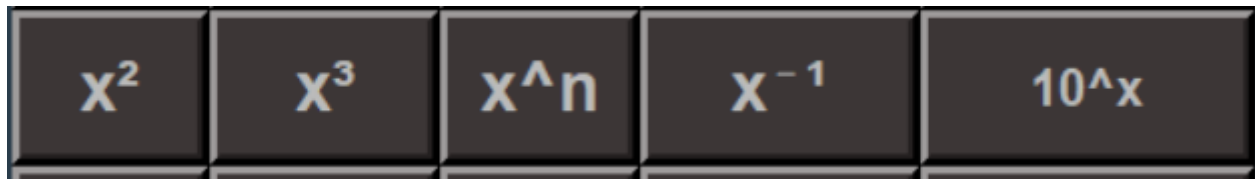
- **2nd Row**



1. **sin** : Sine of an angle  $\theta$  in degrees (e.g.  $\sin(90)=1$ ).
2. **cos** : Cosine of an angle  $\theta$  in degrees (e.g.  $\cos(180)=-1$ ).
3. **tan** : Tangent of an angle  $\theta$  in degrees (e.g.  $\tan(45)=1$ ).

4. **cot** : Cotangent of an angle  $\theta$  in degrees (e.g.  $\cot(45) = 1/\tan(45) = 1$ ).
5.  **$\pi$**  : Archimedes' constant defined as the ratio of a circle's circumference to its diameter.  
It is approximately equal to 3.14159.

- **3rd Row**



1.  **$x^2$**  : x raised to the power of 2 (e.g.  $4^2 = 16$ ).
2.  **$x^3$**  : x raised to the power of 3 (e.g.  $5^3 = 125$ ).
3.  **$x^n$**  : x raised to any power (e.g.  $2^4 = 16$ ).
4.  **$x^{-1}$**  : x raised to the power of (-1). The inverse of number x (e.g.  $2^{-1} = 0.5$ ).
5.  **$10^x$**  : Powers of 10 (e.g.  $10^3 = 1000$ ).

- **4th Row**



1.  **$2\sqrt{\phantom{x}}$**  : Square root of a number (e.g.  $2\sqrt{144} = 12$ ).
2.  **$3\sqrt{\phantom{x}}$**  : Cube root of a number (e.g.  $3\sqrt{8} = 2$ ).
3.  **$\sqrt{\phantom{x}}$**  : Any root of a number (e.g.  $4\sqrt{16} = 2$ ).
4.  **$\log_{10}$**  : The logarithm of a number with base 10 (e.g.  $\log_{10}1000 = 3$ ).
5.  **$\ln$**  : The logarithm of a number with base e (e.g.  $\log_e e = \ln e = 1$ ).

- **5th Row**



1.  **$($**  : Left parenthesis.
2.  **$)$**  : Right parenthesis.
3.  **$\pm$**  : Change the sign of a number.
4.  **$\%$**  : Find the percentage of a number (e.g.  $5\% = 0.05$ ).
5.  **$\log_2$**  : The logarithm of a number with base 2.

- **6th,7th,8th,9th Row**

7	8	9	DEL	AC
4	5	6	*	/
1	2	3	+	-
0	.	EXP	=	

In these rows are :

- > The basic number buttons (0 to 9).
- > The basic math symbols (operators) (+, -, \*, /).
- > The equal sign (=) and point (.).
- > Button **DEL** to delete one or more from the end of the entry.
- > Button **AC** to delete the whole entry.
- > **EXP** : Multiply any number with powers of 10 (e.g.  $2 * 10^{**3} = 2000$ ).

- **10th Row**

fibo	erf	e^x	gamma	lngamma
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1. **fibo** : The nth fibonacci number.
2. **erf** : The error function erf(x) of a number x.
3. **e^x** : Exponential function (e.g.  $e^2 \approx 7.389$ ).
4. **gamma** : The gamma(x) function of a number x.
5. **lngamma** : The ln(gamma(x)) function of a number x.

You can copy/paste numbers from/to the calculator. For the factorial, trigonometric and logarithmic functions and functions of row 10 you need to type or paste the number and then press the button. For windows users with intel CPU machines you can download the GUI executable from the bin folder.

## Author

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