**Mathematical Functions and Expressions in MATLAB**

MATLAB is used for the mathematical calculation like as a calculator. It is also used for technical computing. And there are different mathematical functions and expressions in MATLAB for computing.

**What is Expression in general?**

The expressions consist of the various math functions like as arithmetic, trigonometric, logarithmic, exponential, constant term value, etc. These functions have proper syntax.

So, you must know the syntax of the mathematical functions. Without this, it will not be easy to solve the problems in MATLAB.

### Mathematical Functions and Expressions in MATLAB with Syntax

Here is different Mathematical functions and their syntax for MATLAB.

* **Arithmetic functions**

|  |  |
| --- | --- |
| **Arithmetic Symbol** | **Operation** |
| + | Addition |
| – | Subtraction |
| \* | Multiplication |
| / | Division |

* **Trigonometric functions**

|  |  |
| --- | --- |
| **Trigonometric Symbol** | **Operation / Function** |
| sin(t) | Performs Sin operation on variable ‘t’. |
| cos(t) | Performs cosine operation on variable ‘t’. |
| tan(t) | Performs tangent operation on variable ‘t’. |
| asin(t) | Performs arc sin operation on variable ‘t’ or Inverse of the sin function. |
| acos(t) | Performs arc cosine operation on variable ‘t’ or Inverse of the cos function. |
| atan(t) | Performs arc tangent operation on variable ‘t’ or Inverse of the tan function. |

* **Exponential functions**

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| --- | --- |
| **Exponetial Symbol** | **Operation** |
| exp(t) | Performs exponential operation on variable ‘t’. |

* **Square functions**

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| --- | --- |
| **Symbol** | **Operation** |
| **^** | Power or Square |
| sqrt(t) | Performs square root operation on variable ‘t’. |

* **Logarithm functions**

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| **Symbol** | **Operation** |
| log(t) | Performs a natural logarithmic operation on variable ‘t’. |
| log10(t) | Performs a common logarithmic operation on variable ‘t’. |

* **Maximum & Minimum functions**

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| **Symbol** | **Operation** |
| min(t) | Finds minimum value from array ‘t’. |
| max(t) | Finds maximum value from array ‘t’. |

* **Remainder function**

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| **Symbol** | **Operation** |
| rem(p,q) | Gives the remainder after the dividing ‘p’ by ‘q’. |

* **Phase angle function**

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| **Symbol** | **Operation** |
| angel(t) | Gives phase angle for variable ‘t’. |

* **Other useful functions**

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| **Symbol** | **Operation** |
| abs(t) | Returns absolute value for variable ‘t’. |
| sign(t) | Returns sign of the variable ‘t’. |
| ceil(t) | Returns ceil value for variable ‘t’. |
| floor(t) | Returns floor value for variable ‘t’. |
| conj(t) | Gives complex conjugate of variable ‘t’. |
| round(t) | Returns nearest integer of variable ‘t’. |

* **Constant term value functions**

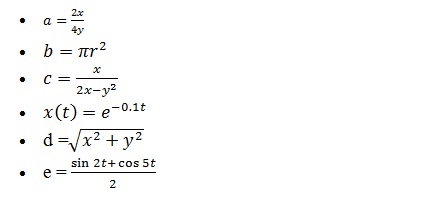
|  |  |
| --- | --- |
| **Symbol / Constant** | **Associated Constant value** |
| pi | The ‘π’ number = 3.14159… |
| i, j | The imaginary unit √-1 |
| Inf | The infinity, ∞ |

These are the mathematical functions representation in the MATLAB.

### How to write the Mathematical Expression in MATLAB?

Let’s do this by solving some basic problems in the MATLAB software.

Some general mathematical equations are…



#### Example 1: How to calculate the value of ‘a’ for below example?

a = (2\*x)/(4\*y)

**Solution:** Suppose, the value of variable ‘x’,  and ‘y’ are 12 and 10, respectively. Put these two values in the above equation and calculate the value of the variable ‘a’.

**Output in MATLAB:**

>> x=12; y=10;

>> a=(2\*x)/(4\*y)

a =

0.6000

Screenshot of the expression in the MATLAB window.

