MATLAB \textit{matrix laboratory} is a fourth-generation high-level programming language and interactive environment for numerical computation, visualization and programming.

\begin{quote}
\textit{MATLAB is developed by MathWorks.}
\end{quote}

It allows matrix manipulations; plotting of functions and data; implementation of algorithms; creation of user interfaces; interfacing with programs written in other languages, including C, C++, Java, and FORTRAN; analyze data; develop algorithms; and create models and applications.

It has numerous built-in commands and math functions that help you in mathematical calculations, generating plots, and performing numerical methods.

**MATLAB's Power of Computational Mathematics**

MATLAB is used in every facet of computational mathematics. Following are some commonly used mathematical calculations where it is used most commonly –

- Dealing with Matrices and Arrays
- 2-D and 3-D Plotting and graphics
- Linear Algebra
- Algebraic Equations
- Non-linear Functions
- Statistics
- Data Analysis
- Calculus and Differential Equations
- Numerical Calculations
- Integration
- Transforms
- Curve Fitting
- Various other special functions

**Features of MATLAB**

Following are the basic features of MATLAB –

- It is a high-level language for numerical computation, visualization and application development.
- It also provides an interactive environment for iterative exploration, design and problem solving.
- It provides vast library of mathematical functions for linear algebra, statistics, Fourier analysis, filtering, optimization, numerical integration and solving ordinary differential equations.
- It provides built-in graphics for visualizing data and tools for creating custom plots.
- MATLAB's programming interface gives development tools for improving code quality maintainability and maximizing performance.
- It provides tools for building applications with custom graphical interfaces.
• It provides functions for integrating MATLAB based algorithms with external applications and languages such as C, Java, .NET and Microsoft Excel.

**Uses of MATLAB**

MATLAB is widely used as a computational tool in science and engineering encompassing the fields of physics, chemistry, math and all engineering streams. It is used in a range of applications including —

• Signal Processing and Communications
• Image and Video Processing
• Control Systems
• Test and Measurement
• Computational Finance
• Computational Biology