

Study Materials
Paper: SEC-MTH-1.1: Computer Algebra System (CAS)

Highlights of Lecture-1

Computer Algebra System (CAS)

- ❖ A computer algebra system is a program with which we can perform calculations, evaluate functions, create graphics, and develop our own programs.
- ❖ The key feature of computer algebra systems is the ability to manipulate expressions symbolically.
- ❖ Some of the typical manipulations possible in a CAS are:
 - (i) Simplifying expressions,
 - (ii) Factoring
 - (iii) Finding derivatives,
 - (iv) Finding integrals, both symbolically and numerically,
 - (v) Solving systems of equations.
- ❖ Some examples of CAS are: Mathematica, Maple, MATLAB, Maxima
- ❖ **Mathematica:**
 - It was created by Stephen Wolfram.
 - It was released in 1988 and still being developed and improved.
 - Mathematica uses Notebook, which allow a user to combine written text with calculations in one integrated documents.
- ❖ **Maple:**
 - It was created by Waterloo Maple under tradename Maplesoft in early 1980s.
 - Like Mathematica, it can create integrated documents, called worksheets, that combine text, calculations, and hyperlink.
- ❖ **Maxima:**
 - Maxima is a free software computer algebra system.
 - It is derived from an early computer program, Macsyma, which dates back to the 1960s.
 - It was made available under an open source license starting in 1998.
 - Maxima can create documents that combine text with calculations through a graphical front end called wxMaxima.

Go through the following.

1. What is open source license?
2. Whether Mathematica is free?
3. At present, which company is developing Mathematica?
4. Use internet or any resource to know more detail history about the above CAS.