

Difference Between Wolfram Alpha and Mathematica

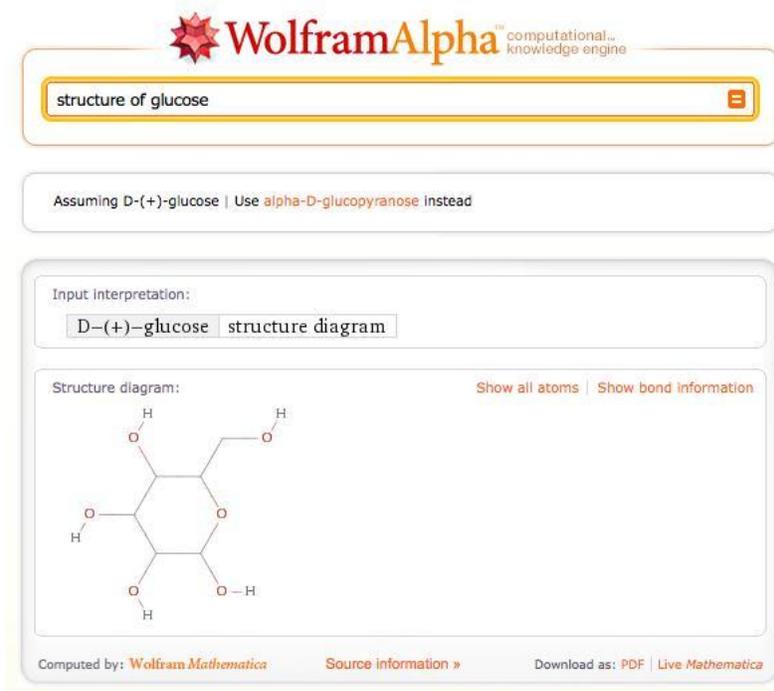
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Key Difference – Wolfram Alpha vs Mathematica

Wolfram Alpha and Mathematica are applications developed by Wolfram Research. Mathematica was developed in 1988 while Wolfram Alpha is a more recent program. The key difference between Wolfram Alpha and Mathematica is that **Wolfram Alpha operates online while Mathematica will need to be bought and installed as a [software](#) program**. Let us take a closer look at both the programs and see what they have to offer.

What is Wolfram Alpha?

Wolfram alpha will function as a computational [search engine](#). It is also referred to as an answer engine. Its interface is similar to the interfaces found with regular search engines. Queries that are typed into to Wolfram Alpha search engine box do not display [websites](#) relevant to the query, but answer the specific query. Given below is a screenshot of Wolfram Alpha search query.



The screenshot shows the Wolfram Alpha interface. At the top, the Wolfram Alpha logo is displayed with the tagline "computational... knowledge engine". Below the logo is a search input field containing the text "structure of glucose". Underneath the search field, there is a suggestion: "Assuming D-(+)-glucose | Use [alpha-D-glucopyranose](#) instead". The "Input interpretation:" section shows "D-(+)-glucose" and "structure diagram" as the selected query. The main content area displays the "Structure diagram:" of D-(+)-glucose, which is a six-membered ring with an oxygen atom at the top-right vertex. The ring carbons are numbered 1 to 5, and the sixth carbon is part of a CH₂OH group extending from carbon 5. Each carbon has a hydroxyl group (OH) attached. The hydroxyl groups on carbons 2, 3, and 4 are on the right side of the ring, while the hydroxyl groups on carbons 1 and 5 are on the left side. The CH₂OH group is on the right side. There are links for "Show all atoms" and "Show bond information". At the bottom, it says "Computed by: [Wolfram Mathematica](#)", "Source information »", and "Download as: PDF | [Live Mathematica](#)".

Figure 01: Wolfram Alpha Search Query

Wolfram Alpha is capable of accepting natural language in the form of mathematical equations keyword, sentence, and phrase. The output results are dynamically calculated. The project website comprises the following system components.

Computational presentation – More than tabular and visual outputs

Dynamic computation – more than 50,000 types of equations and [algorithms](#)

Linguistic analysis – New algorithms for more than 1000 domains.

Curated data – More than 10 trillion pieces of data

What is Mathematica?

Mathematica is a general-purpose computer algebra system that was released in 1988 by Wolfram Research. It is a computer system that is designed to perform complex mathematical calculation and computation. This software has two major parts: the kernel and front end; the kernel is operating as the computational engine of Mathematica while the user interface will be the front end between the user and the kernel. Mathematica notebook operates as the representative instrument of the interface. Packages that come with Mathematica are an essential part of the system.

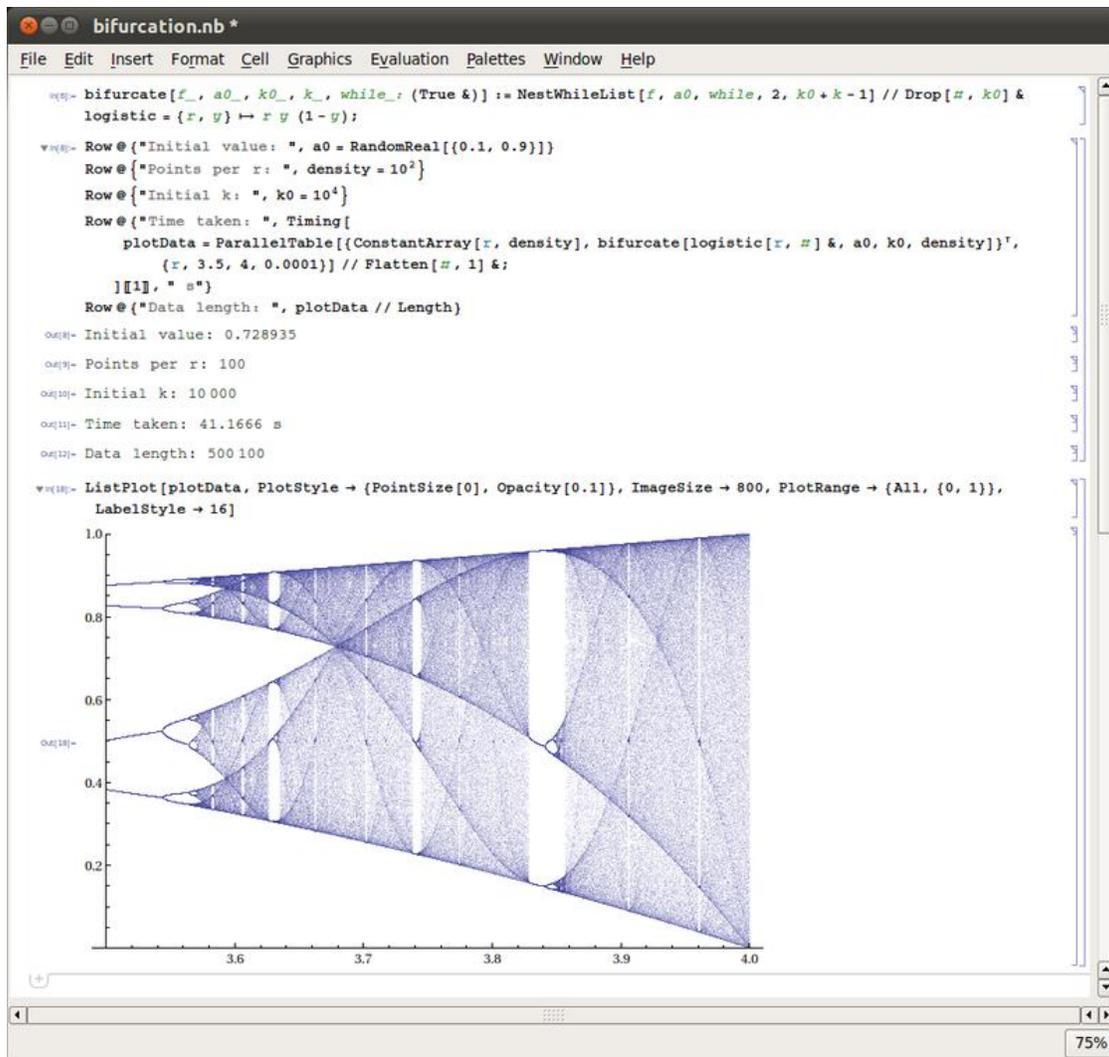


Figure 02: Mathematica 8.0.0 Linux frontend

Mathematica integrates numerical and symbolic computations. It also integrates visualizations, graphics, documentation, dynamic interactivity. Mathematica can be beneficial for scientists, physicists, mathematicians, engineers, amateur mathematicians and anyone who is interested in experimenting math and science on the computer.

What is the Difference Between Wolfram Alpha and Mathematica?

Wolfram Alpha vs Mathematica

With Wolfram Alpha, you can ask a question and get the best answer for it.

Mathematica is a software that is designed to for mathematical operations and list processing

Cost	
Does not cost for usage	Costs money
Clinical Features	
Recently	About 25 years
Operation	
Data for queries is extracted from a database and performs calculations to show results.	Can be installed on a computer or server
Programming	
Programming language is not documented. It performs outside searches and experimentations to get the desired answer for your query.	Uses unconventional programming language to perform calculations, produce documents and create graphics The programming language is documented
Work	
Works online	Works as a software and you will need to purchase it. Now provides cloud support.

Summary – Wolfram Alpha vs Mathematica

In the past few years, updates have enabled Mathematica to query Wolfram Alpha and get results into Mathematica. Wolfram alpha has also been updated to the commands that are present in Mathematica programming language. Neither Mathematica nor Wolfram alpha completely contains the other. The main difference between Wolfram Alpha and Mathematica is that Wolfram Alpha functions online while Mathematica has to be installed as a software program.

Image Courtesy:

1. “Wolfram Alpha search “structure of glucose”” by Cameron Neylon ([CC BY 2.0](#)) via [Flickr](#)
2. “Mathematica logistic bifurcation” By HolyCookie – Own work (CC0) via [Commons Wikimedia](#)

How to Cite this Article?

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