

1. Define Numerical Method

Answer: **Numerical Method** is a mathematical method for estimating solutions to issues that are hard or impossible to resolve analytically. These methods are crucial in a number of fields where complicated mathematical models are frequently encountered, such as engineering, the physical sciences, economics, and the social sciences. It is described as a methodical process that uses numerical approximation rather than precise symbolic procedures to solve mathematical issues. This method works especially well for issues with complex equations and continuous variables, including differential equations and integrals.

2. Define Numerical Analysis.

Answer: **Numerical analysis** is a mathematical field that focuses on developing algorithms for estimating solutions to problems involving continuous variables, with a preference for numerical methods over accurate symbolic methods. It includes the development and evaluation of algorithms for tasks such as solving equations and integrating functions, as well as error analysis, convergence, and stability to assure dependable outcomes. Numerical analysis is widely used in engineering, physical sciences, economics, and other disciplines to simulate complicated real-world processes using efficient computational approaches.

3. Identify the differences between Integers and Real Numbers (Float)? Give at least 5 descriptions.

Integers	Real Numbers(Float)
Whole numbers that can be positive, negative, or zero (e.g., -3, 0, 5)	Include all rational and irrational numbers, encompassing integers as well as fractions and decimals (e.g., 2.5, -1/3, π)
Considered real numbers, but not all real numbers are integers.	Include a broader range of values such as fractions and irrational numbers, which do not fit into the integer category
Do not have fractional or decimal parts; they are whole numbers without any decimal representation.	Can be expressed as decimals and may include both terminating (e.g., 0.75) and non-terminating decimals (e.g., 0.333...).
Countably infinite, can list them in a sequence (e.g., -3, -2, -1, 0, 1, 2, 3,...).	Form an uncountable set because there are infinitely many values between any two integers on the number line

Do not possess the least-upper-bound property (completeness), meaning there is no smallest upper bound for a set of integers.	Real numbers have this property, allowing for limits and bounds within their set.
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4. References

Real Numbers vs. Integers: Definition and Comparison. (2025). Indeed Career Guide. <https://www.indeed.com/career-advice/career-development/integers-vs-real-numbers>.

Integers and rational numbers. (2025). Mathplanet. <https://www.mathplanet.com/education/algebra1/exploring-real-numbers/integers-and-rational-numbers>.

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