

6 Lecture - MTH101

Important Subjective

1. **What is a function in calculus?**

Answer: A function in calculus is a mathematical object that relates an input to an output.

2. **What is the domain of a function?**

Answer: The domain of a function is the set of all possible input values for which the function is defined.

3. **What is the range of a function?**

Answer: The range of a function is the set of all possible output values that the function can produce.

4. **What is a limit in calculus?**

Answer: A limit in calculus is the value that a function approaches as its input approaches a certain value.

5. **How is the concept of a limit formalized using the epsilon-delta definition?**

Answer: The concept of a limit is formalized using the epsilon-delta definition, which states that for every positive number epsilon, there exists a positive number delta such that if $0 < |x - a| < \delta$, then $|f(x) - L| < \epsilon$.

6. **What is continuity in calculus?**

Answer: Continuity is a fundamental property of many functions in calculus, which means that the limit of the function at a point exists and is equal to the value of the function at that point.

7. **What is differentiability in calculus?**

Answer: Differentiability is a property of some functions in calculus, which means that the limit of the difference quotient of the function at a point exists.

8. **What is the derivative of a function?**

Answer: The derivative of a function is defined as the limit of the difference quotient of the function as the difference in input approaches zero.

9. **What is the integral of a function?**

Answer: The integral of a function is defined as the limit of a sum of areas of rectangles as the width of the rectangles approaches zero.

10. **What are infinite sequences and series in calculus?**

Answer: Infinite sequences and series are mathematical concepts in calculus that involve an infinite list of numbers or the sum of an infinite list of numbers. The behavior of infinite sequences and series can be studied using the concept of limits.