10 Lecture - MTH101

Important Subjective

1. **What is the direct substitution method for finding limits?**

Answer: The direct substitution method involves substituting the value that the variable is approaching directly into the function and evaluating it.

2. **When does direct substitution fail?**

Answer: Direct substitution fails when the limit of a function results in an indeterminate form, such as 0/0 or infinity/infinity.

3. **What is the factorization method for finding limits?**

Answer: The factorization method involves simplifying expressions by factoring out common factors and canceling them out.

4. **How can conjugate pairs be used to simplify expressions and eliminate radicals in the denominator?**

Answer: Conjugate pairs are expressions that are identical except for a change in the sign between terms. They can be used to simplify expressions and eliminate radicals in the denominator by multiplying the numerator and denominator by the conjugate of the numerator.

5. **What is rationalizing?**

Answer: Rationalizing is a technique used to eliminate radicals in the denominator by multiplying the numerator and denominator by a conjugate expression.

6. **What is L'Hopital's Rule?**

Answer: L'Hopital's Rule is a powerful technique used to find limits of indeterminate forms by taking the derivative of both the numerator and denominator of a function and evaluating the limit of the resulting quotient.

7. **When can L'Hopital's Rule be applied?**

Answer: L'Hopital's Rule can be applied when the limit of a function results in an indeterminate form, such as 0/0 or infinity/infinity.

8. **What is the squeeze theorem?**

Answer: The squeeze theorem states that if two functions g(x) and h(x) both approach the same limit as x approaches a, and there exists another function f(x) that is squeezed between them, then f(x) must also approach the same limit as x approaches a.

9. **What is the limit of a constant function?**

Answer: The limit of a constant function is equal to the constant value at all points.

10. **What is the limit of a rational function?**

Answer: The limit of a rational function depends on the degree of the numerator and denominator. If the degree of the numerator is less than the degree of the denominator, the limit approaches zero. If the degree of the numerator is greater than the degree of the denominator, the limit approaches infinity. If the degree of the numerator and denominator are equal, the limit approaches the ratio of the leading coefficients.