8 Lecture - MTH101

Important Subjective

1. **What is the purpose of graphing functions in calculus and analytical geometry?**
   Answer: The purpose of graphing functions is to visualize the behavior of a function, such as its shape, intercepts, and key points, on a two-dimensional coordinate plane.

2. **What are the components of a graph?**
   Answer: The x-axis represents the independent variable or input values, while the y-axis represents the dependent variable or output values. The origin (0,0) is where the x and y-axes intersect.

3. **How do we find the intercepts of a function?**
   Answer: To find the x-intercepts, we set the function equal to zero and solve for x. To find the y-intercepts, we set x equal to zero and solve for y.

4. **What is the behavior of even-degree functions with a positive leading coefficient as x approaches infinity or negative infinity?**
   Answer: Even-degree functions with a positive leading coefficient will have a minimum at their vertex and will approach positive infinity as x approaches positive or negative infinity.

5. **What is the behavior of even-degree functions with a negative leading coefficient as x approaches infinity or negative infinity?**
   Answer: Even-degree functions with a negative leading coefficient will have a maximum at their vertex and will approach negative infinity as x approaches positive or negative infinity.

6. **What is the behavior of odd-degree functions as x approaches infinity or negative infinity?**
   Answer: Odd-degree functions will approach positive infinity as x approaches positive infinity and negative infinity as x approaches negative infinity.

7. **What is the difference between even and odd functions?**
   Answer: Even functions are symmetric about the y-axis, while odd functions are symmetric about the origin.

8. **How do we find the critical points of a function?**
   Answer: The critical points of a function are the points where the derivative is equal to zero or does not exist.

9. **How do we determine the location of local extrema?**
   Answer: We use the first derivative test to find the critical points and test the sign of the derivative on either side of the critical point.

10. **How do we determine the location of inflection points?**
    Answer: We use the second derivative test to find the critical points of the second derivative and test the sign of the second derivative on either side of the critical point.