## 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 $\mathbf{x}$ 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 $\mathbf{x}$ 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.

