**Applications of Derivatives – Formula Sheet:**

|  |  |
| --- | --- |
|  | **Average Rate of Change:**  **Tangent Line Equation:** |
|  | **Instantaneous Rate of Change:**  **The Normal Line:** |
|  | **Critical Points:** |
|  | **Rolle’s Theorem:**  If the 3 conditions above are met, then there is a number c in (a, b) where |
|  | **Mean Value Theorem:**  If f(x) is continuous on [a, b] and differentiable on (a, b), then there is a number c in (a, b) such that |

|  |  |
| --- | --- |
|  | **Increasing/Decreasing Test:** |
|  | **First Derivative Test:** |
|  | **Concavity Test:** |
|  | **Inflection Points:**  Note: |
|  | **Second Derivative Test:**  Note: |
| **L’hospital’s Rule:**  Note: | **Newton’s Method for Approximating the Zeros of a Function:** |

|  |  |
| --- | --- |
| **Differentials:**  dx 🡪 Differential of x  dy 🡪 Differential of y  **Note:** | **Tangent Line Approximations:**  **Linear Equation – Point Slope Form:**  **Note:** |
| **Description:**  C(x) 🡪 Cost Function  c(x) 🡪 Average Cost Function  C’(x) 🡪 Marginal Cost Function  **Note:** | **Average Cost Function:** |
| **Revenue Function:**  **Note:** | **Profit Function:**  **Note:** |
| **Description:**  R’(x) 🡪 Marginal Revenue  P’(x) 🡪 Marginal Profit  C’(x) 🡪 Marginal Cost | **Marginal Profit:** |
| **Average Velocity:** | **Average Acceleration:** |
| **Instantaneous Velocity:** | **Instantaneous Acceleration:** |
| **Displacement:** | **The Position Function:** |