BRAC UNIVERSITY
Inspiring Excellence

Lab Assignment 1

Integral Calculus & Differential Equations (MAT120)

1. Differentiate the following functions and find the maxima and the minima-
   a. $x^4 - 8x^3 + 22x^2 - 24x + 5$
   b. $x^3 - 3x^2 - 45x + 13$
   c. $sin(x) + cos(2x)$ in the interval of $(0, \pi)$

2. Find the third derivative of the function $y = x^2 ln(x)$. Show its value in the point $x = 2$.

3. Plot the following functions upto its third derivative with proper labeling and arbitrary range-
   a. $y = x^3 - 3x + 2$
   b. $y = asin(3x)$ where a is an arbitrary constant.

4. Make the very common of shape of an atom (where several ellipses intersect having a common center).