CPSC131 homework due on 10/16/2015

Newton’s Method – Roots & Optimization (30pts) …..…submit your homework in one Excel file.

Note : Newton Raphson Method….

Find the roots values using

Find the max and min values roots using

Write the error value with each root

…

1) (10 pts) Using Excel and Matlab, determine the real root for 

using Newton-Raphson method. Plot and find the roots using an initial guess of: a) *x0* = 4.5 b) *x0* = 4.43

2) (10 pts) Plot the following function and find the roots using both Excel and Matlab.

The volume of liquid V in a hollow horizontal cylinder of radius *r* and length *L* is related to the depth of the liquid *h* by. Determine *h* when *r* = 2 m, *L* = 5 m3, and *V* = 8.5m3. (The derivative of cos-1(u) = . You can make use of Mupad, WolframAlpha or Mathematica to find the derivative of your function.)

3) (10 pts) Plot the function given below and then use Newton’s method to determine the 3 roots, the two max and min values,. Use the initial guess by plotting the function.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *i* | *x* | *f (x)* | *f ' (x)* | *f " (x)* |
| 0 |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |