**MAT2001 – Numerical methods for Engineers**

Assignment -I

1. The flow rate, ***Q*** in a pipe system connecting two reservoirs is described by the equation  Approximate the real root of the equation in the interval  using Newton-Raphson method.
2. Estimate the minimum weight of a bib taps when bore is 20mm using the following tabular information.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bore (in mm) | 8 | 10 | 15 | 25 | 32 | 40 | 50 |
| Weight of bib taps in kg | 0.25 | 0.30 | 0.40 | 1.25 | 1.70 | 2.15 | 3.65 |

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Assignment -III

1. Find the value of *y* (1.1) by using the fourth-order Runge-Kutta method from the differential equation  with the initial condition *y* (1) = 1. Assume *h* = 0.1.
2. Solve the steady state temperatrue distribution equation, numerically with a square grid of size h= as shown in Figure 1, described by the equation  in the regiion  and  with the conditions   for 

 and 



Figure 1