CSE-312 (Lab-2)

1. Calculate the roots of the following equation using Bisection Method considering error up to 0.001:

$$x^3 - x = 4$$

2. Calculate the 10^{th} position approximate root of the following equation using Bisection Method if the given interval is $[\mathbf{2}, \mathbf{3}]$:

$$f(x) = x^3 - 3x - 5 = 0$$

3. Modify the bisection method algorithm, such that it makes fewer calls to the function $f(x)$.
4. You are designing a spherical tank (see the following figure) to hold water for a small village in a developing country. The volume of liquid it can hold can be computed as:

$$V = \pi h^2 \frac{3R - h}{3}$$

Where V is volume, h is the depth and R is the radius. If $R = 3m$, compute to what depth must the tank be filled to so that it holds $30m^3$ of water? Use graphing facilities to get a bracket of the root.