
Assignment 07

Using the bisection method find the real zero of:

(i) $x \text{Exp}[x] = 1$

(ii) $\text{Cos}[x] = x$

Using the method of false position, find the zero of:

[hint: you need to find the equation of the line connecting the points $(x_1, f(x_1))$ and $(x_2, f(x_2))$, as you have done in a previous assignment]

(i) $\text{Tan}[x] = \frac{1}{1+x^2} \quad 0 \leq x < \pi/2$

(ii) $\text{Cos}[x] = x$ [comparing with item (ii) above for the bisection method, which method works faster for this case?]

Using Newton's method find the real zero of:

(i) $\text{ArcTan}[x] = 1$ for $x=1$

(ii) $\text{Log}[x] = 3$ for $x=10$

Using Newton's method find the solutions for

$$f(x,y) = \exp(3x) + 4y$$

$$g(x,y) = 3y^3 - 2 \ln(x) + 7.31 x^2$$

use as an initial guess $x_0=1$ and $y_0=2$

Stop when $|f|$ and $|g|$ are smaller than 10^{-5}