

5. Iterative solution of non-linear equations

1. Write an m-file for bisection method and call the file: **bisect**
 - Input arguments: the function f (we want to find one of the zeros). Give it as a string (the variable can be denoted by x or we can give the notation as another parameter. We will need the ends of the starting interval (a, b), the number of steps (n)).
 - Output arguments: the appropriate approximation of root: x^* and the error estimation ε .
 - Before start we have to check the interval (is there a root inside?)
 - To evaluate function we can use function **eval**
2. Write an m-file for the secant method. The file name be: **secant**
 - Input arguments: the function f (as at bisection method). We will need the ends of the starting interval (a, b), the number of steps (n)
 - Output arguments: the appropriate approximation of root: x^*
 - Let us draw picture to illustrate the graphical meaning.
 - Before start we have to check the interval (is there a root inside?)
3. Write an m-file for the Newton(-Raphson) method. A file name: **newt**
 - Input arguments: the function f (as before). the starting point (x_0) and the number of iterations (n)
 - Output arguments: the appropriate approximation of root: x^*
 - For the derivative we can use function **diff**. Use the symbolic version of command.