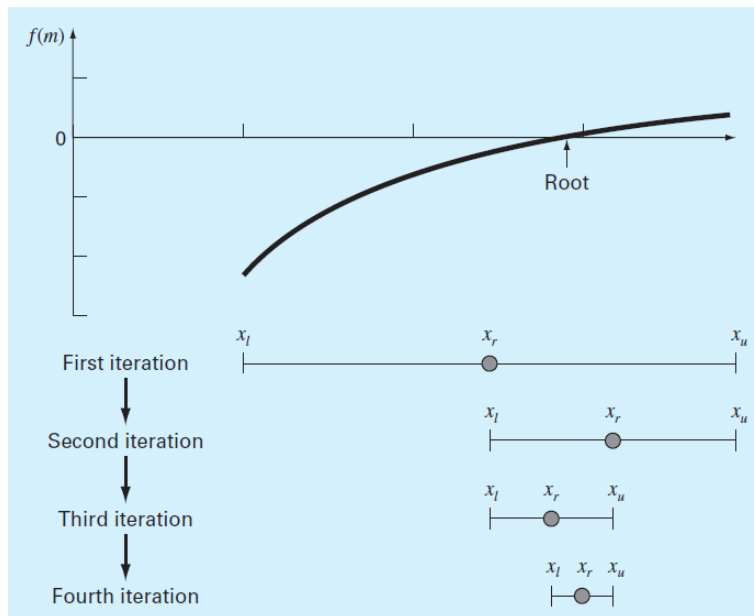


BISECTION METHOD



The **bisection method** is a variation of the incremental search method in which the interval is always divided in half. If a function changes sign over an interval, the function value at the midpoint is evaluated. The location of the root is then determined as lying within the subinterval where the sign change occurs. The subinterval then becomes the interval for the next iteration. The process is repeated until the root is known to the required precision.

The following will be used to compute for the root.

$$x_r = \frac{x_l + x_u}{2}$$

Condition:

- If $f(x_i) > 0$, then change the value of x_u .
- If $f(x_i) < 0$, then change the value of x_l .

x_r = root value
 x_r = initial value
 x_u = upper value
 x_l = lower value