

Incremental Search

input : function f , search range $[x_{\min}, x_{\max}]$, number of steps n

output: list of brackets $[x_l, x_u]$, each containing a root

$\Delta x \leftarrow (x_{\max} - x_{\min}) / n$

brackets $\leftarrow \{ \}$

$x_l \leftarrow x_{\min}$

for $k \leftarrow 1$ **to** n **do**

$x_u \leftarrow x_l + \Delta x$

if $f(x_l) \cdot f(x_u) < 0$ **then**

 // sign change $\Rightarrow$ a root lies in $[x_l, x_u]$

 append $[x_l, x_u]$ to **brackets**

end

$x_l \leftarrow x_u$

end

return **brackets**