

# Incremental-search algorithm

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This algorithm is used in order to find a range of numbers that contain a root for a given non-linear equation (and linears too).

**Data:** iterations

```
if  $y = 0$  then
    print("x0 is a root") else
         $x_1 = x_0 + \text{delta}$   $y_1 = f(x_1)$  counter =
        1 while  $y_0 * y_1 > 0$  and  $y_1 \neq 0$  and counter  $\leq$  iter do
             $x_0 = x_1$   $y_0 = y_1$   $x_1 = x_0 + \text{delta}$   $y_1 = f(x_1)$  counter ++ end
            if  $y_1 = 0$  then
                print("x1 is a root") else
                    if  $y_0 * y_1 < 0$  then
                        print("There's a root between x0 and x1") else
                            print("Fail");
                        end
                    end
                end
            end
        end
    end
```