

Pseudocode for finding roots of polynomials

We can also improve efficiency considerably by finding the root using a coarse increment, backing up by that increment, and finding it again at a finer increment.

In Pseudocode

```
Initialize the coarse increment to say .1
Set x to the starting value
Compute fx
Loop until x is > ending value
  {Set xNew to x plus the coarse increment
  Recompute fxNew
  If there is a zero crossing
    {Reduce the coarse increment by a factor of 10
    Set the xNew to the old x plus the new coarse increment
    Recompute fxNew
    Loop while 10 x Coarse increment is greater then the user
      specified final increment.
      {Loop while there is no zero crossing and x is less
        than the ending value.
        {Set x = xNew
        Set xNew to x plus the coarse increment.
        Recompute fx and fxNew
        }
      Decrease the coarse increment by 10
      Set xNew to x plus the coarse increment
      Recompute fxNew
      }
    Add x and f(x) to the root list
    Reset the coarse increment to .1
  }
Add the Coarse increment to x
Recompute fx
}
```