Recursive procedure for the method of false position

Here is an outline which can be converted into a program for finding the successive approximations to a root by the method of false position**;** one can even construct a program of this sort on some electronic spreadsheets**.** For example**,** a spreadsheet was used to compute the examples in **http://math.ucr.edu/~res/math153-2019/history01c.pdf**.

Starting point: We are given an interval **[LX,RX]** and a reasonable function **F** which is defined on this interval**.** We further assume that **LY = F(LX)** and **RY = F(RX)** satisfy the inequality **RX < 0 < RY.** Finally**,** we are given a small positive number **h** which is needed because evaluating **F** on the approximations to the roots will almost never be zero**,** but if the absolute value of **F** at an approximation is within **h** of zero the approximate root will probably be adequate for our purposes**.**

TRIAL = (LX∗RY – LY∗RX)/(RY – LY) %% NOTE: *This is the root of the linear function whose graph passes through* **(LX,LY)** *and* **(RX,RY)**

IF F(TRIAL) = 0 THEN ROOT = TRIAL: END

ELSE IF F(TRIAL) < 0 THEN *new* **LX = TRIAL,** *new* **LY = F(TRIAL)**

ELSE IF F(TRIAL) > 0 THEN *new* **RX = TRIAL,** *new* **RY = F(TRIAL)**

Repeat until **ABS.VAL. F(TRIAL) < h**

When the inequality in the previous line is satsified**,** the desired root of **F** will normally be approximately equal to **TRIAL,** and one can usually guess the degree of precision for this approximation by looking at the sequence of successive approximations obtained by the process**.** This is apparent in the two examples considered in the previously cited document**.**