Falsa Posición

Primera

$f(x) = 2x^3 - 11.7x^2 + 17.7x - 5$

$x0 = 0 \quad x1 = 5$

$x2 = x0 - f(x0) \dfrac{x1 - x0}{f(x1) - f(x0)}$

$2(0)^3 - 11.7(0)^2 + 17.7(0) - 5 = -5$

$2(5)^3 - 11.7x^2 + 17.7(5) - 5 = 41$

$x2 = 0 - (-5) \dfrac{5 - 0}{41 - 5} = 0.694$

$x2 = 0.694$

Segunda

$2(0.694)^3 - 11.7(0.694)^2 + 17.7(0.694) - 5 = 2.3171$

$2(5)^3 \ldots = 41$

$5 - (-41) \dfrac{(0.694) - (5)}{2.3171 - 41} = 9.563$

Tercera

$2(9.563)^3 - 11.7(9.563)^2 + 17.7(9.563) - 5 =$

$2(0.694) \ldots = 2.3171$

$0.00 \quad 1.7499 \times 10^{12}$

Newton

$f(x)\ 2x^3 - 11.7x^2 + 17.7x - 5$

simplificada

$f(x)\ \frac{20x^3 - 117x^2 + 177x - 50}{10}$

$f'(x)\ \frac{60x^2 - 234x + 117}{10}$

Primera iteración:

$f(3) = \frac{20(3)^3 - 117(3)^2 + 177(3) - 50}{10}$

$f'(3) = 60(3)^2 - 234(3) + 117$

$x_2 = 3 - \frac{-16.5}{-9.7} = \frac{103}{45} =$

2.28888

error $|3 - 2.88| = 0.12$

Segunda.

$f(2.28) = \frac{20(2.28)^3 - 117(2.28)^2 + 177(2.28) - 50}{10}$

$= -1.760$

$f'(2.28) = 60(2.28)^2 - 234(2.28) + 117$

$= -10.7676$

$= 2.28 - \frac{-1.760}{-10.7676} = 2.11$

error $= |2.28 - 2.11| = 0.17$

Tercera

$f(x) = 20(2.11)^3 - 117(2.11)^2 + 177(2.11) - 50$

$= -0.954$

$f'(2.11) = 60(2.11)^2 - 234(2.11) + 177$

$= -10.9614$

$= 2.11 - \frac{-0.954}{-10.9614} = 2.022$

Error: $|2.11 - 2.022| = 0.088$

Cuarta

$f(2.022) = 20(2.022)^3 - 117(2.022)^2 + 177(2.022) - 50$

$= 2.992$

$f'(2.022) = 60(2.022)^2 - 234(2.022) + 177$

$= -11.083$

$= 2.022 - \frac{2.992}{-11.083} = 2.2949$

error $|2.022 - 2.2949| = 0.2729$

~~Ferrer~~

~~f(2.11)~~

Quinta

$f(2.2919)\ 20(2.2919)^3 - 117(2.2919)^2 + 117$
$(2.2919) - 50$
10

$\cong -1.8133$

$f'(2.2919)\ 60(2.2919)^2 - 234(2.2919) + 117$
10

$= -10.4136$

$= 2.2919 - \frac{-1.8133}{-10.4136} - \frac{2.117}{}$

error $= |2.2919 - 2.117| =$

0.1749

$f(x)\ 2x^3 - 11.7x^2 + 17.7x - 5$

$x-1=3 \quad y \quad x0=4$

Primera

$f(x0) = x0 - \frac{x1 - x0}{f(x1) - f(x0)}\ f(x0)$

$4 - \frac{3-4}{(-3.2)-(6.6)}\ (6.6) = 3.3265$

$f(x) = 2(3)^3 - 11.7(3)^2 + 17.7(3) - 5$

$= -3.2$

$f(x) = 2(4)^3 - 11.7(4)^2 + 17.7(4) - 5 =$

6.6

$x2 = \frac{3 - (-3.2 - 3)(6.6)}{(-3.2) - (6.6)} =$

3.3265

Segunda

$x2 = \frac{3 - (3.32 - 3)}{(-2.00) - (-3.2)}\ (-2.00)$

$f(x1)\ 2(3.32)^3 - 11.7(3.32)^2 + 17.7(3.32) - 5$

$= -2.0099$

$f(x0)\ 2(3) - \ldots = -3.2$

3.4813

Secante

Iteración 3

$f(x^3)$

$$X3 = 3.32'3 - \frac{(3.48 - 3.32)}{(-2.009) - (-0.87)} (-0.807)$$

$$2(3.32)^3 - 11.7(3.32)^2 + 17.7 \times (3.32) - 5$$
$$= -2.009$$

$$2(3.48)^3 - 11.7(3.48) + 17.7(3.48) - 5 =$$
$$-0.807$$

$$\text{en: } 3.020\,6$$