

$$2x^3 - 11.7x^2 + 17.7x - 5$$

Falsa Posición

$$x_0 = 4$$

$$x_1 = 3$$

$$f(x_0) = 2(4)^3 - 11.7(4)^2 + 17.7(4) - 5 = 2(64) - 11.7(16) + 17.7(4) - 5 = 128 - 187.2 + 70.8 - 5 = 6.6$$

$$f(x_1) = 2(3)^3 - 11.7(3)^2 + 17.7(3) - 5 = 2(27) - 11.7(9) + 17.7(3) - 5 = 54 - 105.3 + 53.1 - 5 = -3.2$$

$$x_{r1} = x_0 - \frac{f(x_0)(x_1 - x_0)}{f(x_1) - f(x_0)} = 4 - \frac{6.6(3-4)}{-3.2-(6.6)} = 4 - \frac{6.6(-1)}{-9.8} = 4 - \frac{-6.6}{-9.8} =$$

$$4 - 0.6734 = 3.3266$$

$$x_{r1} = 3.3266$$

$$x_1 = x_{r1}$$

$$f(x_{r1}) = 2(3.3266)^3 - 11.7(3.3266)^2 + 17.7(3.3266) - 5 = 2(36.8130) - 11.7(11.0662) + 17.7(3.3266) - 5 = 73.626 - 129.4745 + 58.8808 - 5 = -1.9677$$

$$x_{r2} = 4 - \frac{6.6(3.3266-4)}{-1.9677-(6.6)} = 4 - 0.5187 = 3.4813$$

$$x_{r2} = 3.4813$$

$$x_1 = x_{r2}$$

$$f(x_{r2}) = 2(3.4813)^3 - 11.7(3.4813)^2 + 17.7(3.4813) - 5 = 2(42.1914) - 11.7(12.1194) + 17.7(3.4813) - 5 = 84.3828 - 141.7969 + 61.6190 - 5 = -0.7522$$

$$x_{r3} = 4 - \frac{6.6(3.4813-4)}{-0.7522-(6.6)} = 4 - 0.4656 = 3.5344$$

$$x_{r3} = 3.5344$$

$$x_1 = x_{r3}$$

$$f(x_{r3}) = 2(3.5344)^3 - 11.7(3.5344)^2 + 17.7(3.5344) - 5 = 2(44.516) - 11.7(12.4919) + 17.7(3.5344) - 5 = 88.3033 - 146.1562 + 62.5588 - 5 = 0.2941$$

$$x_{r4} = 4 - \frac{6.6(3.5344-4)}{0.2941-(6.6)} = 4 - 0.4457 = 3.5543$$

$$x_{r4} = 3.5543$$

$$x_1 = x_{r4}$$

$$f(x_4) = 2(3.5543)^3 - 11.7(3.5543)^2 + 17.7(3.5543) - 5 = 2(44.904) - 11.7(12.6330) + 17.7(3.5543) - 5 = 89.8082 - 147.8066 + 62.9111 - 5 = -0.0893$$

$$x_5 = 4 - \frac{6.6(3.5543 - 4)}{(-0.0893) - (6.6)} = 4 - 0.4395 = 3.5605$$

$$x_5 = 3.5605$$

# Ponto Fijo.

$$x = \frac{2x^3 - 11.7x^2 - 5}{-17.7}$$

$$g(x) = \frac{2x^3 - 11.7x^2 - 5}{-17.7}$$

$$x_0 = 3$$

$$x_1 = \frac{2(3)^3 - 11.7(3)^2 - 5}{-17.7} = \frac{2(27) - 11.7(9) - 5}{-17.7} = \frac{54 - 105.3 - 5}{-17.7} = \frac{-56.3}{-17.7}$$

$$x_1 = 3.1807$$

$$x_2 = \frac{2(3.1807)^3 - 11.7(3.1807)^2 - 5}{-17.7} = \frac{2(32.1786) - 11.7(10.1168) - 5}{-17.7} = \frac{64.3572 - 118.3665 - 5}{-17.7}$$

$$\frac{64.3572 - 118.3665 - 5}{-17.7} = \frac{-59.0093}{-17.7} = 3.3338 \quad x_2 = 3.3338$$

$$x_3 = \frac{2(3.3338)^3 - 11.7(3.3338)^2 - 5}{-17.7} = \frac{2(37.0525) - 11.7(11.1142) - 5}{-17.7} = \frac{74.1051 - 130.0364 - 5}{-17.7}$$

$$\frac{74.1051 - 130.0364 - 5}{-17.7} = 3.4424 \quad x_3 = 3.4424$$

$$x_4 = \frac{2(3.4424)^3 - 11.7(3.4424)^2 - 5}{-17.7} = \frac{2(40.7928) - 11.7(11.8501) - 5}{-17.7} = \frac{81.5856 - 138.6463 - 5}{-17.7}$$

$$\frac{81.5856 - 138.6463 - 5}{-17.7} = 3.5062 \quad x_4 = 3.5062$$

$$x_5 = \frac{2(3.5062)^3 - 11.7(3.5062)^2 - 5}{-17.7} = \frac{2(43.1032) - 11.7(12.2934) - 5}{-17.7} = \frac{86.2065 - 143.8332 - 5}{-17.7}$$

$$\frac{86.2065 - 143.8332 - 5}{-17.7} = 3.5382$$



## Newton Raphson

$$f(x) = 2x^3 - 11.2x^2 + 17.7x - 5$$

$$x_0 = 3.$$

$$x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}$$

$$f'(x) = 6x^2 - 22.4x + 17.7$$

$$x_1 = 3 - \frac{-3.2}{1.5} = 3 + 2.1333 = 5.1333$$

$$x_2 = 5.1333 - \frac{47.90}{55.55} = 5.1333 - 0.8622 = 4.2711$$

$$x_3 = 4.2711 - \frac{12.69}{26.90} = 4.2711 - 0.4717 = 3.7994$$

$$x_4 = 3.7994 - \frac{2.75}{14.97} = 3.7994 - 0.1837 = 3.6157$$

$$x_5 = 3.6157 - \frac{0.28}{11.02} = 3.6157 - 0.0254 = 3.5903$$

Seconde

$$X-1 = 3$$

$$X_0 = 4$$

$$X = X_i - \frac{f_{X_i} * (X_{i-1} - X)}{f_{X_{i-1}} - f_{X_i}}$$

$$X = 4 - \frac{6.6 * (3 - 4)}{-3.2 - 6.6} = 3.32$$

$$X = 3.32 - \frac{-2.0 * (4 - 3.32)}{6.6 - (-2.0)} = 3.47$$

$$X = 3.47 - \frac{-0.89 * (3.32 - 3.47)}{-2.0 - (-0.89)} = 3.59$$

$$X = 3.59 - \frac{0.28 * (3.47 - 3.59)}{-0.89 - 0.28} = 3.56$$

$$X = 3.56 - \frac{-0.03 * (3.59 - 3.56)}{-0.28 - (-0.03)} = 3.563$$