**Función: 𝑓(𝑥) = 𝑥³ − 𝑥 − 2 Intervalo inicial: 𝑎 = 1, 𝑏 = 2 Número de iteraciones: 06**

𝑓(1) = 1³ − 1 − 2 = -2 𝑓(2) = 2³ − 2 − 2 = 4

Como 𝑓(1) y 𝑓(2) tienen signos opuestos, existe una raíz en el intervalo [1,2].

La fórmula de posición falsa es: 𝑝ₙ = 𝑏ₙ - \frac{𝑓(𝑏ₙ)(𝑎ₙ - 𝑏ₙ)}{𝑓(𝑎ₙ) - 𝑓(𝑏ₙ)}

Realizamos 6 iteraciones.

Iteraciones:

| **Iteración** | **a** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 1 | 2 | 1.3333 | -1.0370 | [1.3333, 2] |
| 2 | 1.3333 | 2 | 1.4620 | -0.3333 | [1.4620, 2] |
| 3 | 1.4620 | 2 | 1.5046 | -0.0899 | [1.5046, 2] |
| 4 | 1.5046 | 2 | 1.5157 | -0.0225 | [1.5157, 2] |
| 5 | 1.5157 | 2 | 1.5184 | -0.0056 | [1.5184, 2] |
| 6 | 1.5184 | 2 | 1.5190 | -0.0014 | [1.5190, 2] |

**Función: 𝑓(𝑥) = 𝑥² − 2𝑥 − 3 Intervalo inicial: 𝑎 = 0, 𝑏 = 4 Número de iteraciones: 04**

𝑓(0) = 0² − 2(0) − 3 = -3 𝑓(4) = 4² − 2(4) − 3 = 5

𝑓(0) y 𝑓(4) tienen signos opuestos.

Fórmula de posición falsa: 𝑝ₙ = 𝑏ₙ - \frac{𝑓(𝑏ₙ)(𝑎ₙ - 𝑏ₙ)}{𝑓(𝑎ₙ) - 𝑓(𝑏ₙ)}

Realizamos 4 iteraciones.

Iteraciones:

| **Iteración** | **A** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 4 | 1.5 | -2.25 | [1.5, 4] |
| 2 | 1.5 | 4 | 2.0625 | -0.6836 | [2.0625, 4] |
| 3 | 2.0625 | 4 | 2.2386 | -0.0894 | [2.2386, 4] |
| 4 | 2.2386 | 4 | 2.2631 | 0.0124 | [2.2386, 2.2631] |

**Función: 𝑓(𝑥) = 𝑥³ − 6𝑥² + 11𝑥 − 6 Intervalo inicial: 𝑎 = 2, 𝑏 = 3 Número de iteraciones: 05**

𝑓(2) = 2³ − 6(2)² + 11(2) − 6 = 0 𝑓(3) = 3³ − 6(3)² + 11(3) − 6 = 0

𝑓(2) y 𝑓(3) son ceros, indicando raíces exactas en 𝑥 = 2 y 𝑥 = 3.

Aplicamos la fórmula de posición falsa entre 2 y 3.

Iteraciones:

| **Iteración** | **a** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 2.5 | -0.375 | [2.5, 3] |
| 2 | 2.5 | 3 | 2.7143 | -0.0868 | [2.7143, 3] |
| 3 | 2.7143 | 3 | 2.8065 | -0.0209 | [2.8065, 3] |
| 4 | 2.8065 | 3 | 2.8426 | -0.0050 | [2.8426, 3] |
| 5 | 2.8426 | 3 | 2.8566 | -0.0012 | [2.8566, 3] |

**Función: 𝑓(𝑥) = 𝑥⁴ − 5𝑥² + 4 Intervalo inicial: 𝑎 = 0, 𝑏 = 1.5 Número de iteraciones: 04**

𝑓(0) = 4 𝑓(1.5) = (1.5)⁴ − 5(1.5)² + 4 = -2.6875

Fórmula de posición falsa: 𝑝ₙ = 𝑏ₙ - \frac{𝑓(𝑏ₙ)(𝑎ₙ - 𝑏ₙ)}{𝑓(𝑎ₙ) - 𝑓(𝑏ₙ)}

Iteraciones:

| **Iteración** | **A** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1.5 | 0.6923 | 1.1132 | [0.6923, 1.5] |
| 2 | 0.6923 | 1.5 | 1.0417 | -0.7882 | [0.6923, 1.0417] |
| 3 | 0.6923 | 1.0417 | 0.8914 | 0.3362 | [0.8914, 1.0417] |
| 4 | 0.8914 | 1.0417 | 0.9735 | -0.1344 | [0.8914, 0.9735] |

**Función: 𝑓(𝑥) = 𝑥⁴ − 10𝑥² + 9 Intervalo inicial: 𝑎 = 0, 𝑏 = 1.5 Número de iteraciones: 07**

𝑓(0) = 9 𝑓(1.5) = (1.5)⁴ − 10(1.5)² + 9 = -4.3125

Iteraciones:

| **Iteración** | **a** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1.5 | 0.7576 | 4.1553 | [0.7576, 1.5] |
| 2 | 0.7576 | 1.5 | 1.0722 | -0.6048 | [0.7576, 1.0722] |
| 3 | 0.7576 | 1.0722 | 0.8983 | 2.1521 | [0.8983, 1.0722] |
| 4 | 0.8983 | 1.0722 | 1.0085 | 0.3876 | [1.0085, 1.0722] |
| 5 | 1.0085 | 1.0722 | 1.0447 | -0.0836 | [1.0085, 1.0447] |
| 6 | 1.0085 | 1.0447 | 1.0361 | 0.0056 | [1.0361, 1.0447] |
| 7 | 1.0361 | 1.0447 | 1.0370 | 0.0002 | [1.0361, 1.0447] |

**Función: 𝑓(𝑥) = 𝑥³ − 4𝑥 + 1 Intervalo inicial: 𝑎 = 0, 𝑏 = 1.5 Número de iteraciones: 05**

𝑓(0) = 1 𝑓(1.5) = (1.5)³ − 4(1.5) + 1 = -2.125

Iteraciones:

| **Iteración** | **a** | **b** | **p** | **f(p)** | **Intervalo nuevo** |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1.5 | 0.4138 | 0.5726 | [0.4138, 1.5] |
| 2 | 0.4138 | 1.5 | 0.5897 | 0.1256 | [0.5897, 1.5] |
| 3 | 0.5897 | 1.5 | 0.6286 | -0.0029 | [0.5897, 0.6286] |
| 4 | 0.5897 | 0.6286 | 0.6270 | 0.0004 | [0.6270, 0.6286] |
| 5 | 0.6270 | 0.6286 | 0.6272 | 0.0000 | [0.6270, 0.6286] |