# Tarea 2 Métodos Numéricos

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Sea . Encontrar una raíz mediante en el intervalo [1,2].

# Bisección

Resultado:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(c) |
| 1 | 0.0000 | 2.0000 | 1.0000 | -1.0000 |
| 2 | 1.0000 | 2.0000 | 1.5000 | 1.3750 |
| 3 | 1.0000 | 1.5000 | 1.2500 | -0.0469 |
| 4 | 1.2500 | 1.5000 | 1.3750 | 0.5996 |
| 5 | 1.2500 | 1.3750 | 1.3125 | 0.2610 |

La raíz buscada es: 1.2656, con 5 iteraciones.

# Falsa Posición

Resultado:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(a) | F(b) | F(c) |
| 1 | 0.0000 | 2.0000 | 0.5855 | -1.0000 | 2.4161 | -0.2480 |
| 2 | 0.0000 | 0.5855 | 0.7785 | -1.0000 | -0.2480 | -0.2480 |
| 3 | 0.7785 | 0.5855 | 0.7377 | 0.0666 | -0.2480 | 0.0666 |
| 4 | 0.7377 | 0.5855 | 0.7392 | -0.0024 | -0.2480 | -0.0024 |
| 5 | 0.7392 | 0.5855 | 0.7391 | 0.0001 | -0.2480 | 0.0001 |

La raíz buscada es: 0.9624 con 5 iteraciones.

# Newton

|  |  |
| --- | --- |
| Iteración | Raíz |
| 1 | 1.3333 |
| 2 | 1.2638 |

Iteraciones: 2 Valor aproximado: 1.26388888889

# Secante

La solución es: 1.25971202333506

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | Xn+1 | xn | Xn-1 | F(xn) |
| 1 | 1.1429 | 1.0000 | 2.0000 | -0.5073 |
| 2 | 1.2097 | 2.0000 | 1.1429 | -0.2299 |
| 3 | 1.2650 | 1.1429 | 1.2097 | 0.0245 |
| 4 | 1.2597 | 1.2097 | 1.2650 | -0.0010 |

La gráfica de la función es la siguiente:



Sea . Encontrar una raíz mediante en el intervalo [-1,0].

# Bisección

Resultado:

La raíz buscada es: -0.8438 con 5 iteraciones.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(c) |
| 1 | -1.0000 | 0.0000 | -0.5000 | -0.3513 |
| 2 | -1.0000 | -0.5000 | -0.7500 | -0.1330 |
| 3 | -1.0000 | -0.7500 | -0.8750 | 0.0239 |
| 4 | -0.8750 | -0.7500 | -0.8125 | -0.0590 |
| 5 | -0.8750 | -0.8125 | -0.8438 | -0.0187 |

# Falsa Posición

Resultado:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(a) | F(b) | F(c) |
| 1 | -0.6961 | 0.0000 | -1.1234 | -1.0000 | 2.4161 | -0.2480 |
| 2 | -1.1234 | 0.0000 | -0.5901 | -1.0000 | -0.2480 | -0.2480 |
| 3 | -0.5901 | 0.0000 | -1.3783 | 0.0666 | -0.2480 | 0.0666 |
| 4 | -1.3783 | 0.0000 | -0.4335 | -0.0024 | -0.2480 | -0.0024 |
| 5 | -0.4335 | 0.0000 | -1.9861 | 0.0001 | -0.2480 | 0.0001 |

La raíz buscada es: -0.8594 con 5 iteraciones.

# Newton

|  |  |
| --- | --- |
| Iteración | Raíz |
| 1 | -1.0 |
| 2 | -0.873 |
| 3 | -0.858 |

# Iteraciones: 2 Valor aproximado: -0.857876358486

# Secante

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | Xn+1 | xn | Xn-1 | F(xn) |
| 1 | -0.6961 | -1.0000 | 0.0000 | -0.1902 |
| 2 | -1.1234 | 0.0000 | -0.6961 | 0.4519 |
| 3 | -0.8227 | -0.6961 | -1.1234 | -0.0461 |
| 4 | -0.8505 | -1.1234 | -0.8227 | -0.0097 |
| 5 | -0.8579 | -0.8227 | -0.8505 | 0.0003 |

La solución es: -0.857899588931



Sea . Encontrar una raíz mediante en el intervalo [0,2].

# Bisección

Resultado:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(c) |
| 1 | 0.0000 | 2.0000 | 1.0000 | 0.4597 |
| 2 | 0.0000 | 1.0000 | 0.5000 | -0.3776 |
| 3 | 0.5000 | 1.0000 | 0.7500 | 0.0183 |
| 4 | 0.5000 | 0.7500 | 0.6250 | -0.1860 |
| 5 | 0.6250 | 0.7500 | 0.6875 | -0.0853 |

La raiz buscada es: 0.6875 con 5 iteraciones.

# Falsa Posición

Resultado:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Iteración | a | b | c | F(a) | F(b) | F(c) |
| 1 | 0.0000 | 2.0000 | 0.5855 | -1.0000 | 2.4161 | -0.2480 |
| 2 | 0.0000 | 0.5855 | 0.7785 | -1.0000 | -0.2480 | -0.2480 |
| 3 | 0.7785 | 0.5855 | 0.7377 | 0.0666 | -0.2480 | 0.0666 |
| 4 | 0.7377 | 0.5855 | 0.7392 | -0.0024 | -0.2480 | -0.0024 |
| 5 | 0.7392 | 0.5855 | 0.7391 | 0.0001 | -0.2480 | 0.0001 |

# La raiz buscada es: 0.7391 con 5 iteraciones.

# Newton

|  |  |
| --- | --- |
| Iteración | a |
| 1 | 0.0000 |
| 2 | 1.0 |
| 3 | 0.7503 |
| 4 | 0.7391 |

# Iteraciones: 4 Valor aproximado: 0.739112890911

# Secante

La solucion es: 0.739081800403

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Iteración | Xn+1 | xn | Xn-1 | F(xn) |
| 1 | 1.8508 | -1.0000 | 0.0000 | 2.1272 |
| 2 | 0.5918 | 0.0000 | 1.8508 | -0.2381 |
| 3 | 0.7186 | 1.8508 | 0.5918 | -0.0342 |
| 4 | 0.7398 | 0.5918 | 0.7186 | 0.0012 |
| 5 | 0.7391 | 0.7186 | 0.7398 | -0.0000 |

La gráfica de la función es

