**TUGAS FINAL – METODE NUMERIK DAN KOMPUTASI**

01. Buatlah tabel beda hingga dari data-data dibawah ini

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | c(t) |  | c. | r | F(r) |
|  | 1.0 | 0.0000 |  |  | 0.5 | 0.3894 |  |  | 3 | 2.1972 |
|  | 1.5 | 0.9123 |  |  | 0.9 | 0.5739 |  |  | 7 | 1.3048 |
|  | 2.0 | 2.7726 |  |  | 1.3 | 0.6786 |  |  | 11 | 0.9536 |
|  | 2.5 | 5.7268 |  |  | 1.7 | 0.7266 |  |  | 15 | 0.7613 |
|  | 3.0 | 9.8875 |  |  | 2.1 | 0.7349 |  |  | 19 | 0.6384 |
|  | 3.5 | 15.3463 |  |  | 2.3 | 0.5898 |  |  |  |  |

02. Lengkapilah tabel beda hingga di bawah ini



03. Carilah nilai f(0.1875), c(0.1345) dan F(1.112) dengan metode Newton-Gregory Forward, dari data-data dibawah ini

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | c(t) |  | c. | r | F(r) |
|  | 0.125 | 0.79618 |  |  | 0.1 | 0.003 |  |  | 1 | 0.7 |
|  | 0.250 | 0.77334 |  |  | 0.3 | 0.067 |  |  | 2 | 0.8 |
|  | 0.375 | 0.74371 |  |  | 0.5 | 0.148 |  |  | 3 | 1.5 |
|  | 0.500 | 0.70413 |  |  | 0.7 | 0.248 |  |  | 4 | 3.4 |
|  | 0.625 | 0.65632 |  |  | 0.9 | 0.370 |  |  | 5 | 7.1 |
|  | 0.750 | 0.60228 |  |  | 1.1 | 0.518 |  |  | 6 | 13.2 |
|  |  |  |  |  | 1.3 | 0.697 |  |  | 7 | 22.3 |
|  |  |  |  |  |  |  |  |  | 8 | 34.7 |
|  |  |  |  |  |  |  |  |  |  |  |

1. Carilah nilai f(0.7324), c(1.1978) dan F(7.5412) dari data soal nomor 3 dengan metode Newton-Gregory Backward
2. Carilah nilai f(0.38324), c(0.74538) dan F(5.91412) dari data soal nomor 3 dengan metode Stirling
3. Carilah nilai f(0.1875), c(0.74538) dan F(0.75412) dari data soal nomor 3 dengan metode Lagrange
4. Carilah nilai f(0.7324), c(1.1978) dan F (3.4125) dari data dibawah ini dengan metode Hermite

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | c(t) |  | c. | r | F(r) |
|  | 0.1 | 0.0300 |  |  | 0.5 | 4.1267 |  |  | 0.5 | -0.2081 |
|  | 0.8 | 1.7217 |  |  | 1.1 | 5.0000 |  |  | 1.0 | -0.9800 |
|  | 1.9 | 5.3939 |  |  | 1.6 | 4.3879 |  |  | 1.5 | -0.9805 |
|  | 3.2 | -0.5604 |  |  | 1.9 | 3.4835 |  |  | 2.0 | 0.5673 |
|  | 3.8 | -6.9752 |  |  | 2.8 | -1.1360 |  |  | 2.5 | 2.4004 |
|  | 5.3 | -13.2331 |  |  | 3.5 | -4.0057 |  |  | 3.0 | 2.2617 |
|  | 7.0 | 13.7967 |  |  | 4.1 | -4.9957 |  |  | 3.5 | -0.5093 |

1. Carilah nilai x pada f(x)=0.5798, t pada c(t)=0.4567 dan r pada F(r)=11.3465 dari data soal nomor 3 dengan metode Lagrange
2. Carilah nilai f’(0.75) dari data dibawah ini dengan metode Newton Gregory Forward

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | f(t) |  | c. | r | f(r) |
|  | 0.7 | 0.5214 |  |  | 0.5 | 1.4310 |  |  | 0.6 | 0.5361 |
|  | 0.8 | 0.5392 |  |  | 1.0 | 2.0350 |  |  | 0.9 | 0.9947 |
|  | 0.9 | 0.5489 |  |  | 1.5 | 3.0310 |  |  | 1.2 | 1.7025 |
|  | 1.0 | 0.5518 |  |  | 2.0 | 4.6720 |  |  | 1.5 | 2.7123 |
|  | 1.1 | 0.5492 |  |  | 2.5 | 7.3790 |  |  | 1.9 | 4.0644 |
|  | 1.2 | 0.5421 |  |  | 3.0 | 11.8410 |  |  | 2.1 | 5.7919 |
|  | 1.3 | 0.5314 |  |  | 3.5 | 19.1980 |  |  | 2.4 | 7.9227 |

1. Carilah nilai f’(2.65) dari data dibawah ini dengan metode Newton Gregory Backward

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | f(t) |  | c. | r | f(r) |
|  | 0.5 | 0.4549 |  |  | 0.6 | -0.9195 |  |  | 0.6 | 0.5361 |
|  | 0.9 | 0.5489 |  |  | 1.0 | 0.0000 |  |  | 0.9 | 0.9947 |
|  | 1.3 | 0.5314 |  |  | 1.4 | 1.4132 |  |  | 1.2 | 1.7025 |
|  | 1.7 | 0.4658 |  |  | 1.8 | 3.1740 |  |  | 1.5 | 2.7123 |
|  | 2.1 | 0.3857 |  |  | 2.2 | 5.2038 |  |  | 1.9 | 4.0644 |
|  | 2.5 | 0.3078 |  |  | 2.6 | 7.4530 |  |  | 2.1 | 5.7919 |
|  | 2.9 | 0.2394 |  |  | 3.0 | 9.8875 |  |  | 2.4 | 7.9227 |

1. Carilah nilai f’(1.15), y’(0.975) dan k’(1.586) dari data dibawah ini dengan metode Stirling

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | f(t) |  | c. | r | f(r) |
|  | 0.5 | -1.0397 |  |  | 0.7 | 0.5214 |  |  | 0.6 | 0.5361 |
|  | 0.8 | -0.5355 |  |  | 0.8 | 0.5392 |  |  | 0.9 | 0.9947 |
|  | 1.1 | 0.3145 |  |  | 0.9 | 0.5489 |  |  | 1.2 | 1.7025 |
|  | 1.4 | 1.4132 |  |  | 1.0 | 0.5518 |  |  | 1.5 | 2.7123 |
|  | 1.7 | 2.7062 |  |  | 1.1 | 0.5492 |  |  | 1.9 | 4.0644 |
|  | 2.0 | 4.1589 |  |  | 1.2 | 0.5421 |  |  | 2.1 | 5.7919 |
|  | 2.3 | 5.7471 |  |  | 1.3 | 0.5314 |  |  | 2.4 | 7.9227 |

1. Carilah nilai f’(1.15), y’(0.975) dan k’(1.586) dari data dibawah ini dengan metode Lagrange

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. | x | f(x) |  | b. | t | f(t) |  | c. | r | f(r) |
|  | 0.5 | 0.1650 |  |  | 0.6 | 1.6835 |  |  | 1.4 | 2.1510 |
|  | 1.0 | 0.2710 |  |  | 0.8 | 1.7283 |  |  | 1.5 | 2.3520 |
|  | 1.5 | 0.4470 |  |  | 1.0 | 1.1349 |  |  | 1.6 | 2.5770 |

1. Carilah nilai integral dari data berikut dengan batas dari x=0.1 sampai x=0.7 dengan metode trapezoida

|  |  |
| --- | --- |
| x | f(x) |
| 0.1 | 1.0300 |
| 0.2 | 1.7103 |
| 0.3 | 1.6388 |
| 0.4 | 1.6093 |
| 0.5 | 1.6179 |
| 0.6 | 1.6612 |
| 0.7 | 1.7366 |

1. Carilah nilai integral dari data berikut dengan batas dari x=0.1 sampai x=0.7 dengan metode simpson 1/3

|  |  |
| --- | --- |
| x | f(x) |
| 1 | 1.8287 |
| 2 | 5.6575 |
| 3 | 11.4862 |
| 4 | 19.3149 |
| 5 | 29.1437 |
| 6 | 40.9724 |
| 7 | 54.8011 |

1. Carilah nilai y(0.1) dari persamaan diferensial dibawah ini dengan metode Taylor
2. 
3. 
4. Carilah nilai y(0.01) dari persamaan diferensial berikut dengan metode Euler
5.  b. 
6. Gambarkan flowchart dari metode penyelesaian akar-akar persamaan karakteristik
7. Metode Tabulasi d. Metode iterasi bentuk x=g(x)
8. Metode Biseksi e. Metode Newton Raphson
9. Metode Regula Falsi
10. Gambarkan flowchart dari metode penyelesaian persamaan linear serentak
11. Metode Invers dan Determinan Matriks
12. Metode Dekomposisi L-U
13. Metode Iterasi Jakobi
14. Metode Gauss Siedel
15. Gambarkan flowchart dari metode penyelesaian persamaan
16. Eliminasi Gauss
17. Gauss Jordan
18. Gambarkan flowchart dari metode penyelesaian interpolasi
19. Metode Newton-Gregory Forward
20. Metode Newton-Gregory Backward
21. Metode Stirling
22. Metode Lagrange
23. Gambarkan flowchart dari metode integrasi numerik
24. Metode Trapezoida
25. Metode Simpson 1/3
26. Gambarkan flowchart dari metode penyelesaian persamaan diferensial
27. Metode Taylor
28. Metode Euler
29. Tuliskan script program mfile dari salah satu metode penyelesaian akar-akar persamaan karakteristik, berikan 1 contoh penyelesaian permasalahan
30. Tuliskan script program mfile dari salah satu metode penyelesaian persamaan linear serentak, berikan 1 contoh penyelesaian permasalahan
31. Tuliskan script program mfile dari metode eliminasi Gauss dan Gauss Jordan, berikan masing-masing 1 contoh penyelesaian permasalahan