Prueba métodos de segunda entrega

LU con gaussiana simple:

Stage # 1

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. -1.3 -4. 1.1]

[0. 8.5 -2. 19.5]]

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. 0. 1. 0.]

[3.5 0. 0. 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. 0. 0.]

[0. 0. 0. 19.5]]

Stage # 2

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. -3.61904762 15.58730159]]

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. -0.08253968 1. 0.]

[3.5 0.53968254 0. 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. 0. 15.58730159]]

Stage # 3

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. 0. 13.94923858]]

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. -0.08253968 1. 0.]

[3.5 0.53968254 0.96446701 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. 0. 13.94923858]]

Solution reg:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

LU con pivoteo parcial:

Stage # 1

[[14. 5. -2. 30. 1.]

[0. 15.14285714 3.14285714 5.85714286 0.92857143]

[0. -1.3 -4. 1.1 1.]

[0. -2.42857143 0.57142857 -5.57142857 0.71428571]]

Stage # 2

[[14. 5. -2. 30. 1.]

[0. 15.14285714 3.14285714 5.85714286 0.92857143]

[0. 0. -3.73018868 1.60283019 1.07971698]

[0. 0. 1.0754717 -4.63207547 0.86320755]]

Stage # 3

[[14. 5. -2. 30. 1.]

[0. 15.14285714 3.14285714 5.85714286 0.92857143]

[0. 0. 1.0754717 -4.63207547 0.86320755]

[0. 0. 0. -14.46315789 4.07368421]]

Solution:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

Stage # 1

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. -1.3 -4. 1.1]

[0. -2.42857143 0.57142857 -5.57142857]]

L:

[[1. 0. 0. 0.]

[0.07142857 1. 0. 0.]

[0. 0. 1. 0.]

[0.28571429 0. 0. 1.]]

U:

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. 0. 0. 0.]

[0. 0. 0. 0.]]

P:

[[0. 0. 0. 1.]

[0. 1. 0. 0.]

[0. 0. 1. 0.]

[1. 0. 0. 0.]]

Stage # 2

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. 0. -3.73018868 1.60283019]

[0. 0. 1.0754717 -4.63207547]]

L:

[[1. 0. 0. 0.]

[0.07142857 1. 0. 0.]

[0. -0.08584906 1. 0.]

[0.28571429 -0.16037736 0. 1.]]

U:

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. 0. -3.73018868 1.60283019]

[0. 0. 0. 0.]]

P:

[[0. 0. 0. 1.]

[0. 1. 0. 0.]

[0. 0. 1. 0.]

[1. 0. 0. 0.]]

Stage # 3

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. 0. -3.73018868 1.60283019]

[0. 0. 0. -4.16995448]]

L:

[[1. 0. 0. 0.]

[0.07142857 1. 0. 0.]

[0. -0.08584906 1. 0.]

[0.28571429 -0.16037736 -0.28831563 1.]]

U:

[[14. 5. -2. 30.]

[0. 15.14285714 3.14285714 5.85714286]

[0. 0. -3.73018868 1.60283019]

[0. 0. 0. -4.16995448]]

P:

[[0. 0. 0. 1.]

[0. 1. 0. 0.]

[0. 0. 1. 0.]

[1. 0. 0. 0.]]

Solution reg:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

Doolittle

Stage # 1

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. 0. 1. 0.]

[3.5 0. 0. 1.]]

U:

[[4. -1. 0. 3.]

[0. 1. 0. 0.]

[0. 0. 1. 0.]

[0. 0. 0. 1.]]

Stage # 2

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. -0.08253968 1. 0.]

[3.5 0.53968254 0. 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. 1. 0.]

[0. 0. 0. 1.]]

Stage # 3

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. -0.08253968 1. 0.]

[3.5 0.53968254 0.96446701 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. 0. 1.]]

Stage # 4

L:

[[1. 0. 0. 0.]

[0.25 1. 0. 0.]

[0. -0.08253968 1. 0.]

[3.5 0.53968254 0.96446701 1.]]

U:

[[4. -1. 0. 3.]

[0. 15.75 3. 7.25]

[0. 0. -3.75238095 1.6984127]

[0. 0. 0. 13.94923858]]

Solution reg:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

Crout:

Stage # 1

L:

[[4. 0. 0. 0.]

[1. 1. 0. 0.]

[0. 0. 1. 0.]

[14. 0. 0. 1.]]

U:

[[1. -0.25 0. 0.75]

[0. 1. 0. 0.]

[0. 0. 1. 0.]

[0. 0. 0. 1.]]

Stage # 2

L:

[[4. 0. 0. 0.]

[1. 15.75 0. 0.]

[0. -1.3 1. 0.]

[14. 8.5 0. 1.]]

U:

[[1. -0.25 0. 0.75]

[0. 1. 0.19047619 0.46031746]

[0. 0. 1. 0.]

[0. 0. 0. 1.]]

Stage # 3

L:

[[4. 0. 0. 0.]

[1. 15.75 0. 0.]

[0. -1.3 -3.75238095 0.]

[14. 8.5 -3.61904762 1.]]

U:

[[1. -0.25 0. 0.75]

[0. 1. 0.19047619 0.46031746]

[0. 0. 1. -0.45262267]

[0. 0. 0. 1.]]

Stage # 4

L:

[[4. 0. 0. 0.]

[1. 15.75 0. 0.]

[0. -1.3 -3.75238095 0.]

[14. 8.5 -3.61904762 13.94923858]]

U:

[[1. -0.25 0. 0.75]

[0. 1. 0.19047619 0.46031746]

[0. 0. 1. -0.45262267]

[0. 0. 0. 1.]]

Solution reg:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

Cholesky:

Stage # 1

L:

[[2. +0.j 0. +0.j 0. +0.j 0. +0.j]

[0.5+0.j 1. +0.j 0. +0.j 0. +0.j]

[0. +0.j 0. +0.j 1. +0.j 0. +0.j]

[7. +0.j 0. +0.j 0. +0.j 1. +0.j]]

U:

[[2. +0.j -0.5+0.j 0. +0.j 1.5+0.j]

[0. +0.j 1. +0.j 0. +0.j 0. +0.j]

[0. +0.j 0. +0.j 1. +0.j 0. +0.j]

[0. +0.j 0. +0.j 0. +0.j 1. +0.j]]

Stage # 2

L:

[[2. +0.j 0. +0.j 0. +0.j 0. +0.j]

[0.5 +0.j 3.96862697+0.j 0. +0.j 0. +0.j]

[0. +0.j -0.32756921+0.j 1. +0.j 0. +0.j]

[7. +0.j 2.14179868+0.j 0. +0.j 1. +0.j]]

U:

[[2. +0.j -0.5 +0.j 0. +0.j 1.5 +0.j]

[0. +0.j 3.96862697+0.j 0.75592895+0.j 1.82682829+0.j]

[0. +0.j 0. +0.j 1. +0.j 0. +0.j]

[0. +0.j 0. +0.j 0. +0.j 1. +0.j]]

Stage # 3

L:

[[2. +0.j 0. +0.j 0. +0.j

0. +0.j]

[0.5 +0.j 3.96862697+0.j 0. +0.j

0. +0.j]

[0. +0.j -0.32756921+0.j 0. +1.93710633j

0. +0.j]

[7. +0.j 2.14179868+0.j 0. +1.86827515j

1. +0.j]]

U:

[[2. +0.j -0.5 +0.j 0. +0.j

1.5 +0.j]

[0. +0.j 3.96862697+0.j 0.75592895+0.j

1.82682829+0.j]

[0. +0.j 0. +0.j 0. +1.93710633j

0. -0.87677825j]

[0. +0.j 0. +0.j 0. +0.j

1. +0.j]]

Stage # 4

L:

[[2. +0.j 0. +0.j 0. +0.j

0. +0.j]

[0.5 +0.j 3.96862697+0.j 0. +0.j

0. +0.j]

[0. +0.j -0.32756921+0.j 0. +1.93710633j

0. +0.j]

[7. +0.j 2.14179868+0.j 0. +1.86827515j

3.73486795+0.j]]

U:

[[2. +0.j -0.5 +0.j 0. +0.j

1.5 +0.j]

[0. +0.j 3.96862697+0.j 0.75592895+0.j

1.82682829+0.j]

[0. +0.j 0. +0.j 0. +1.93710633j

0. -0.87677825j]

[0. +0.j 0. +0.j 0. +0.j

3.73486795+0.j]]

Solution reg:

[0.52510917 0.25545852 -0.41048035 -0.28165939]

Jacobi:

T:

[[0. 0.25 0. -0.75]

[-0.06451613 0. -0.19354839 -0.51612903]

[0. -0.325 0. 0.275]

[-0.46666667 -0.16666667 0.06666667 0.]]

C:

[[0.25]

[0.06451613]

[-0.25]

[0.03333333]]

radio espectral:

0.7535169428701507

| Iter | E |

| 1 | 0.3609341242060913 | [[0.25 0.06451613 -0.25 0.03333333]]

| 2 | 0.14562059206430902 | [[0.24112903 0.07956989 -0.26180108 -0.11075269]]

| 3 | 0.14300818286037656 | [[0.35295699 0.15679327 -0.3063172 -0.1099086]]

| 4 | 0.0748014357566136 | [[0.37162977 0.15775893 -0.33118268 -0.17793329]]

| 5 | 0.06781846767106765 | [[0.4228897 0.19647642 -0.35020331 -0.18846589]]

| 6 | 0.039794838535037354 | [[0.44046853 0.20228693 -0.36568296 -0.22010815]]

| 7 | 0.034373218837995455 | [[0.46565284 0.22048036 -0.37627299 -0.230312]]

| 8 | 0.022299115905640772 | [[0.47785409 0.22617175 -0.38499192 -0.24580292]]

| 9 | 0.018404146842246727 | [[0.49089513 0.23506742 -0.39110162 -0.25302666]]

| 10 | 0.01274208943260705 | [[0.49853685 0.23913697 -0.39597924 -0.2610024]]

| 11 | 0.010153523789418853 | [[0.50553605 0.24370452 -0.39949518 -0.26557197]]

| 12 | 0.007297184431054095 | [[0.51010511 0.24629195 -0.40223626 -0.26983392]]

| 13 | 0.005682976184690885 | [[0.51394843 0.24872742 -0.40424921 -0.27258013]]

| 14 | 0.004170129100507794 | [[0.51661695 0.25028647 -0.40579595 -0.27491378]]

| 15 | 0.003202876242866248 | [[0.51875696 0.25161814 -0.40694439 -0.27652205]]

| 16 | 0.002377650044978286 | [[0.52029607 0.25253243 -0.40781946 -0.27781923]]

| 17 | 0.0018113554695020299 | [[0.52149753 0.25327201 -0.40847333 -0.2787482]]

| 18 | 0.0013534193250926492 | [[0.52237915 0.25380052 -0.40896916 -0.27947574]]

| 19 | 0.0010262349782541843 | [[0.52305693 0.25421511 -0.409341   -0.2800083]]

| 20 | 0.000769598898146032 | [[0.52356   0.25451822 -0.40962219 -0.28041849]]

| 21 | 0.0005819809551116511 | [[0.52394342 0.2547519 -0.40983351 -0.28072252]]

| 22 | 0.0004373454493213835 | [[0.52422986 0.25492498 -0.40999306 -0.28095448]]

| 23 | 0.0003302180435300071 | [[0.52444711 0.25505711 -0.4101131 -0.28112764]]

| 24 | 0.00024844229604978866 | [[0.52461001 0.2551557 -0.41020366 -0.28125904]]

| 25 | 0.0001874221799343558 | [[0.52473321 0.25523054 -0.41027184 -0.28135753]]

| 26 | 0.0001411024088532528 | [[0.52482578 0.25528662 -0.41032324 -0.28143204]]

| 27 | 0.00010639302687024356 | [[0.52489568 0.25532905 -0.41036196 -0.28148802]]

| 28 | 8.012914855822946e-05 | [[0.52494828 0.25536092 -0.41039115 -0.28153029]]

| 29 | 6.040125884579987e-05 | [[0.52498795 0.255385   -0.41041313 -0.28156209]]

| 30 | 4.550053096223367 5e-05 | [[0.52501782 0.25540311 -0.4104297 -0.28158609]]

| 31 | 3.4292711698199305e-05 | [[0.52504034 0.25541677 -0.41044218 -0.28160415]]

| 32 | 2.5835995875187863e-05 | [[0.5250573   0.25542706 -0.41045159 -0.28161777]]

| 33 | 1.9470213684017856e-05 | [[0.52507009 0.25543481 -0.41045868 -0.28162802]]

| 34 | 1.4669798856319548e-05 | [[0.52507972 0.25544065 -0.41046402 -0.28163576]]

| 35 | 1.1054701396074889e-05 | [[0.52508698 0.25544506 -0.41046805 -0.28164158]]

| 36 | 8.329473337992045e-06 | [[0.52509245 0.25544837 -0.41047108 -0.28164597]]

| 37 | 6.276644365854363e-06 | [[0.52509657 0.25545087 -0.41047336 -0.28164928]]

| 38 | 4.72941863820054e-06 | [[0.52509968 0.25545276 -0.41047509 -0.28165177]]

| 39 | 3.5637761663255912e-06 | [[0.52510202 0.25545418 -0.41047638 -0.28165365]]

| 40 | 2.6853207891975457e-06 | [[0.52510378 0.25545525 -0.41047736 -0.28165506]]

| 41 | 2.0234602362765088e-06 | [[0.52510511 0.25545605 -0.4104781 -0.28165613]]

| 42 | 1.524697070927425e-06 | [[0.52510611 0.25545666 -0.41047865 -0.28165693]]

| 43 | 1.1488933128741926e-06 | [[0.52510686 0.25545712 -0.41047907 -0.28165754]]

| 44 | 8.657058973397584e-07 | [[0.52510743 0.25545746 -0.41047939 -0.28165799]]

| 45 | 6.523267194297135e-07 | [[0.52510786 0.25545772 -0.41047962 -0.28165834]]

| 46 | 4.915377253677003e-07 | [[0.52510818 0.25545792 -0.4104798 -0.2816586]]

| 47 | 3.7038286194962125e-07 | [[0.52510843 0.25545806 -0.41047994 -0.28165879]]

| 48 | 2.790892744563103e-07 | [[0.52510861 0.25545818 -0.41048004 -0.28165894]]

| 49 | 2.1029877372291008e-07 | [[0.52510875 0.25545826 -0.41048012 -0.28165905]]

| 50 | 1.5846353178159807e-07 | [[0.52510885 0.25545832 -0.41048017 -0.28165913]]

| 51 | 1.1940504540415286e-07 | [[0.52510893 0.25545837 -0.41048022 -0.2816592]]

| 52 | 8.997367396720935e-08 | [[0.52510899 0.25545841 -0.41048025 -0.28165924]]

Gauss-Seidel:

T:

[[0. 0.25 0. -0.75]

[0. -0.01612903 -0.19354839 -0.46774194]

[0. 0.00524194 0.06290323 0.42701613]

[0. -0.11362903 0.03645161 0.45642473]]

C:

[[0.25]

[0.0483871]

[-0.26572581]

[-0.1091129]]

radio espectral:

0.5994876461601171

| Iter | E |

| 1 | 0.38387125576026065 | [[0.25 0.0483871 -0.26572581 -0.1091129]]

| 2 | 0.16541590217059002 | [[0.34393145 0.15007414 -0.32878014 -0.17409904]]

| 3 | 0.10021770191219365 | [[0.41809282 0.19103484 -0.35996356 -0.21761336]]

| 4 | 0.059762438191934164 | [[0.46096873 0.21676315 -0.3802917 -0.24326538]]

| 5 | 0.035811834120004604 | [[0.48663982 0.23228118 -0.39238936 -0.25863807]]

| 6 | 0.0214728969293167 | [[0.50204885 0.24156283 -0.39963339 -0.26785883]]

| 7 | 0.012872489375017275 | [[0.51128483 0.24712813 -0.40397782 -0.27338613]]

| 8 | 0.007716879024174241 | [[0.51682163 0.25046457 -0.40658217 -0.27669967]]

| 9 | 0.004626178059659651 | [[0.52014089 0.25246471 -0.40814344 -0.2786861]]

| 10 | 0.002773336370545754 | [[0.52213075 0.25366376 -0.4090794 -0.27987694]]

| 11 | 0.0016625808687072675 | [[0.52332364 0.25438258 -0.4096405 -0.28059083]]

| 12 | 0.0009966966961832656 | [[0.52403877 0.25481351 -0.40997687 -0.2810188]]

| 13 | 0.0005975073561320842 | [[0.52446748 0.25507184 -0.41017852 -0.28127536]]

| 14 | 0.0003581982784618611 | [[0.52472448 0.25522671 -0.41029941 -0.28142917]]

| 15 | 0.00021473544281859914 | [[0.52487856 0.25531955 -0.41037188 -0.28152138]]

| 16 | 0.00012873124516221438 | [[0.52497092 0.25537521 -0.41041532 -0.28157665]]

| 17 | 7.717279114958393e-05 | [[0.52502629 0.25540857 -0.41044137 -0.28160979]]

| 18 | 4.626413491387999e-05 | [[0.52505948 0.25542858 -0.41045698 -0.28162965]]

| 19 | 2.773477734112971e-05 | [[0.52507938 0.25544057 -0.41046634 -0.28164156]]

| 20 | 1.6626656384995486e-05 | [[0.52509131 0.25544776 -0.41047195 -0.2816487]]

| 21 | 9.967475099843376e-06 | [[0.52509847 0.25545206 -0.41047531 -0.28165298]]

| 22 | 5.975378185666305e-06 | [[0.52510275 0.25545465 -0.41047733 -0.28165555]]

| 23 | 3.582165403429045e-06 | [[0.52510532 0.2554562 -0.41047854 -0.28165709]]

| 24 | 2.1474639059772973e-06 | [[0.52510686 0.25545713 -0.41047926 -0.28165801]]

| 25 | 1.2873780821539104e-06 | [[0.52510779 0.25545768 -0.4104797 -0.28165856]]

| 26 | 7.717672562045895e-07 | [[0.52510834 0.25545802 -0.41047996 -0.28165889]]

| 27 | 4.626649358021458e-07 | [[0.52510867 0.25545822 -0.41048012 -0.28165909]]

| 28 | 2.7736191328926196e-07 | [[0.52510887 0.25545834 -0.41048021 -0.28165921]]

| 29 | 1.6627504048509075e-07 | [[0.52510899 0.25545841 -0.41048027 -0.28165928]]

| 30 | 9.96798326917106e-08 | [[0.52510906 0.25545845 -0.4104803 -0.28165932]]

SOR (relajación):

T:

[[-0.5   0.375   0.   -1.125]

[0.0483871 -0.53629032 -0.29032258 -0.66532258]

[-0.02358871 0.26144153 -0.35846774 0.73684476]

[0.33554435 -0.10228327 0.03673387 0.52751512]]

C:

[[0.375   ]

[0.06048387]

[-0.40448589]

[-0.26806956]]

radio espectral:

0.6312081938144991

| Iter | E |

| 1 | 0.6162413639182875 | [[0.375 0.06048387 -0.40448589 -0.26806956]]

| 2 | 0.3183687701744234 | [[0.5117597 0.34197623 -0.45004916 -0.30469599]]

| 3 | 0.14532732350431174 | [[0.59014422 0.23522845 -0.39033638 -0.30859371]]

| 4 | 0.10981562792867332 | [[0.51530648 0.28152633 -0.4443708 -0.27123634]]

| 5 | 0.0736017944866153 | [[0.52806002 0.24390875 -0.38360511 -0.28336154]]

| 6 | 0.04309603460965154 | [[0.52121751 0.25512531 -0.42445767 -0.27939858]]

| 7 | 0.021289186893738724 | [[0.52438664 0.25800267 -0.40379938 -0.28225196]]

| 8 | 0.01074325590162919 | [[0.52709114 0.25251377 -0.41262971 -0.28222923]]

| 9 | 0.006899037365800104 | [[0.52365497 0.25813679 -0.41094639 -0.2810727]]

| 10 | 0.005517942007620385 | [[0.5261806 0.25369679 -0.40914648 -0.28212891]]

| 11 | 0.004227797073687221 | [[0.52444102 0.25638029 -0.41179033 -0.28131836]]

| 12 | 0.0028492851107941534 | [[0.52540526 0.25508527 -0.40950273 -0.28184609]]

| 13 | 0.0016903257881472752 | [[0.5250312 0.2555134 -0.41107293 -0.28158444]]

| 14 | 0.0008831838909803171 | [[0.52508442 0.25554748 -0.41019651 -0.2816734]]

| 15 | 0.0004631641904563805 | [[0.52517067 0.25533652 -0.41056857 -0.28167376]]

| 16 | 0.000269869947242065 | [[0.52504884 0.25556209 -0.41049266 -0.2816371]]

| 17 | 0.00021552372202836138 | [[0.5251531 0.25538879 -0.41043101 -0.28167892]]

| 18 | 0.00016665347467758126 | [[0.52508303 0.2554967 -0.41053169 -0.28164601]]

| 19 | 0.00011384964936981007 | [[0.52512151 0.25544277 -0.41044149 -0.28166689]]

| 20 | 6.816800086131088e-05 | [[0.52510554 0.25546126 -0.41050422 -0.28165617]]

| 21 | 3.5926281401066357e-05 | [[0.52510839 0.25546165 -0.41046862 -0.28166007]]

| 22 | 1.771948170711931e-05 | [[0.5251115 0.25545384 -0.41048422 -0.2816599]]

| 23 | 1.0644413450872444e-05 | [[0.52510682 0.2554626 -0.41048062 -0.28165854]]

| 24 | 8.426539811643612e-06 | [[0.52511092 0.25545573 -0.41047851 -0.28166015]]

| 25 | 6.571070997423744e-06 | [[0.52510811 0.25546007 -0.41048235 -0.28165885]]

| 26 | 4.5378254339767775e-06 | [[0.52510968 0.25545785 -0.41047881 -0.28165969]]

| 27 | 2.7470507661039295e-06 | [[0.52510901 0.25545865 -0.41048131 -0.28165925]]

| 28 | 1.4620350791622568e-06 | [[0.52510915 0.25545862 -0.41047987 -0.28165942]]

| 29 | 7.20197106090464e-07 | [[0.52510926 0.25545834 -0.41048052 -0.28165941]]

| 30 | 4.207385047981539e-07 | [[0.52510908 0.25545868 -0.41048035 -0.28165936]]

| 31 | 3.293454914862184e-07 | [[0.52510924 0.2554584 -0.41048028 -0.28165942]]

| 32 | 2.588757888007562e-07 | [[0.52510913 0.25545858 -0.41048043 -0.28165937]]

| 33 | 1.807148320424063e-07 | [[0.52510919 0.25545849 -0.41048029 -0.2816594]]

| 34 | 1.1059753951318346e-07 | [[0.52510916 0.25545852 -0.41048039 -0.28165938]]

| 35 | 5.945865338657106e-08 | [[0.52510917 0.25545852 -0.41048033 -0.28165939]]

Vandermonde:

Matriz de Vandermonde:

[[-1. 1. -1. 1.]

[0. 0. 0. 1.]

[27. 9. 3. 1.]

[64. 16. 4. 1.]]

Coeficientes del polinomio:

[-1.14166667 5.825 -5.53333333 3.]

Polinomio:

-1.1416666666666666x^3 + 5.824999999999999x^2 + -5.533333333333332x^1 + 3.0x^0

Newton:

Tabla de diferencias divididas:

[[15.5 0. 0. 0.]

[3. -12.5 0. 0.]

[8. 1.66666667 3.54166667 0.]

[1. -7. -2.16666667 -1.14166667]]

Coeficientes del polinomio de Newton:

[15.5 -12.5 3.54166667 -1.14166667]

Polinomio:

(15.5) + (-12.5)(x - (-1)) + (3.5416666666666665)(x - (-1))(x - (0)) + (-1.1416666666666666)(x - (-1))(x - (0))(x - (3))

Lagrange:

Polinomios interpolantes de Lagrange:

-0.05x^3 + 0.35x^2 + -0.6x^1 + -0.0x^0 //L 0

0.08333333333333333x^3 + -0.5x^2 + 0.4166666666666667x^1 + 1.0x^0 //L 1

-0.08333333333333333x^3 + 0.25x^2 + 0.3333333333333333x^1 + -0.0x^0 //L 2

0.05x^3 + -0.1x^2 + -0.15x^1 + 0.0x^0 //L 3

Polinomio

15.5*L0+3*L1+8*L2+1*L3

Polinomio extendido:

15.5*(-0.05x^3 + 0.35x^2 + -0.6x^1 + -0.0x^0) + 3*(0.08333333333333333x^3 + -0.5x^2 + 0.4166666666666667x^1 + 1.0x^0) + 8*(-0.08333333333333333x^3 + 0.25x^2 + 0.3333333333333333x^1 + -0.0x^0) + 1*(0.05x^3 + -0.1x^2 + -0.15x^1 + 0.0x^0)

Trazadores lineales:

Coeficientes de los trazadores:

-12.5 3.0

1.6666666666666667 3.0

-7.0 29.0

Trazadores:

-12.5x + 3.0

1.6666666666666667x + 3.0

-7.0x + 29.0

Trazadores cuadráticos:

Coeficientes de los trazadores:

0.0 -12.5 3.0000000000000004

4.722222222222222 -12.5 3.0000000000000004

-22.833333333333325 152.8333333333333 -244.99999999999994

Trazadores:

0.0x^2 + -12.5x + 3.0000000000000004

4.722222222222222x^2 + -12.5x + 3.0000000000000004

-22.833333333333325x^2 + 152.8333333333333x + -244.99999999999994

Trazadores cúbicos:

Coeficientes de los trazadores:

2.533333333333333 7.6 -7.4333333333333345 3.0

-1.5222222222222213 7.6 -7.4333333333333345 3.0

2.033333333333334 -24.400000000000006 88.56666666666668 -93.00000000000001

Trazadores:

2.533333333333333x^3 + 7.6x^2 + -7.4333333333333345x + 3.0

-1.5222222222222213x^3 + 7.6x^2 + -7.4333333333333345x + 3.0

2.033333333333334x^3 + -24.400000000000006x^2 + 88.56666666666668x + -93.00000000000001