

and for step length 0.0005, the value of $Y(2)$ is very close to 3 digit accuracy. For 8 significant figures, $Y(2) = 0.89521188$. ✓✓

This is OK but not what was asked for. 2/2

4) Find the largest ^{magnitude} eigenvalue first by direct iteration. Unless the vector chosen is the eigenvector of another eigenvalue, this method will find the largest eigenvalue and the corresponding eigenvector.

MATRIX A

STARTING VECTOR

60.140, -16.70, -18.30, 3.3200, -48.60	1.0000
154.80, -37.56, -62.80, 25.400, -131.7	.00000
-174.4, 51.900, 65.340, -15.10, 149.70	.00000
-185.7, 51.600, 73.300, -23.46, 157.10	.00000
75.600, -28.10, -20.10, -4.140, -61.26	.00000

Direct Iteration

Number of decimal places = 6

Iter.	Eigenvector	Alpha
1	-.323855, -.833602, .9391491, 1.000000, -.407108,	-185.700
100	-.327096, -.829366, .9964350, 1.000000, -.490712,	-6.95515
199	-.326004, -.831635, .9910090, 1.000000, -.475581,	-8.43931
298	-.326211, -.831205, .9920372, 1.000000, -.478448,	-8.11134
397	-.326168, -.831295, .9918229, 1.000000, -.477850,	-8.17756
496	-.326176, -.831276, .9918667, 1.000000, -.477972,	-8.16393
595	-.326175, -.831280, .9918578, 1.000000, -.477947,	-8.16672
694	-.326175, -.831279, .9918596, 1.000000, -.477952,	-8.16615

Eigenvalue of largest modulus is -8.16627

Found in 773 iterations.

Corresponding eigenvector

(-.326175, -.831280, .9918592, 1.000000, -.477951)

safer to choose

5+2=7 d.p.

(due to the number of calculation taking place)
In fact with 773 iterations it should really be 5+3 = 8 d.p.

corrected to 5 decimal places.

slight error.

The smallest eigenvalue can be found using inverse iteration with $p=0$