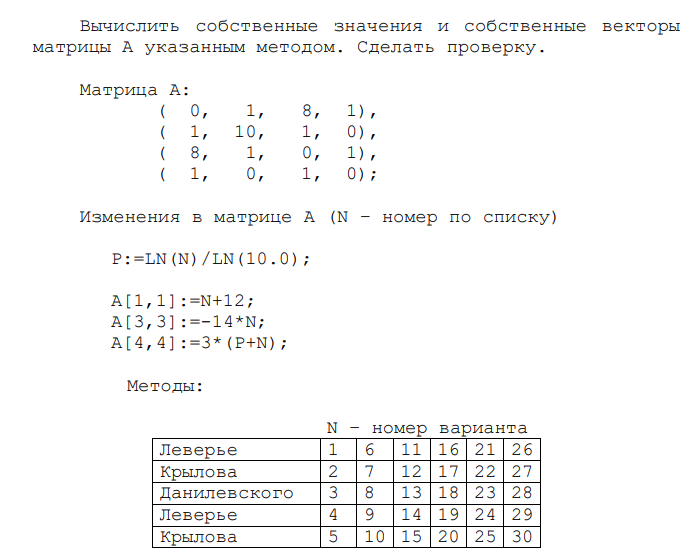
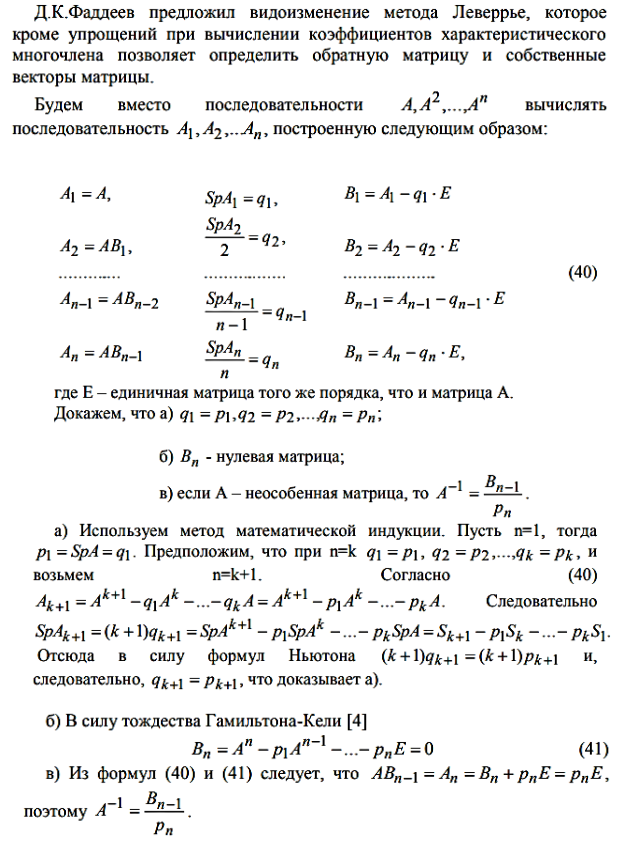
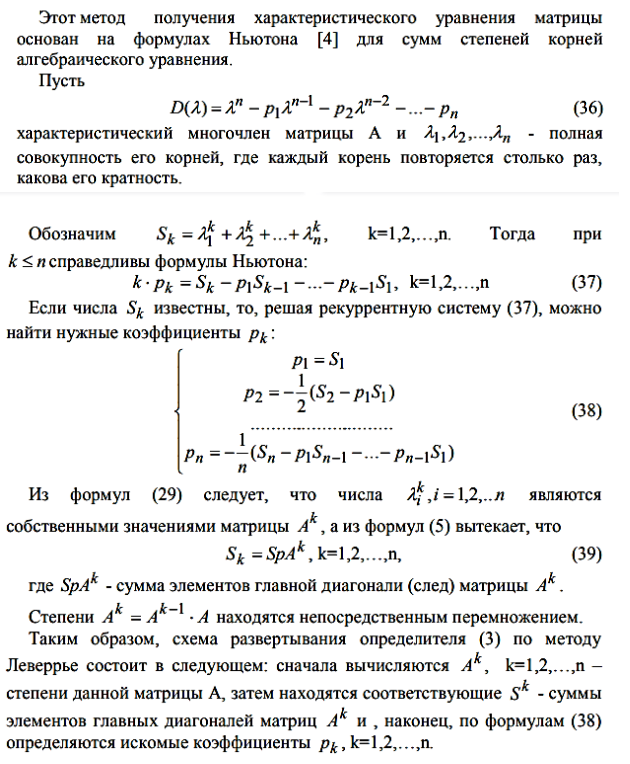
Лабораторная работа 1 собственные значения

Вариант 16



Метод Леверье



N = len(A)

A\_main = A

E = [[0 for \_ in range(N)] for \_ in range(N)]

p\_list = []

B\_list = [[] for i in range (N)]

for i in range(0,N):

E[i][i] = 1

for k in range(1,N):

p = 0

for i in range(N):

p += A[i][i]

p = (1/k) \* p

p\_list.append(p)

B = matrix\_sub(A, scalar\_multiply(E, p))

for i in range(len(B)):

B\_list[k].append(B[i][0])

A = MatrixMatrixMult(A\_main, B)

p = 0

for i in range(N):

p += A[i][i]

p = (1/N) \* p

p\_list.append(p)

A\_inv = scalar\_multiply(B, 1/p)

**Характеристическое уравнения для нахождения собственных значений**

def f(x,A):

return x\*\*4 - x\*\*3 \* A[0] - x\*\*2 \* A[1] - x \* A[2] - A[3]

**Решения характеристического уравнения методом бисекций**

res = []

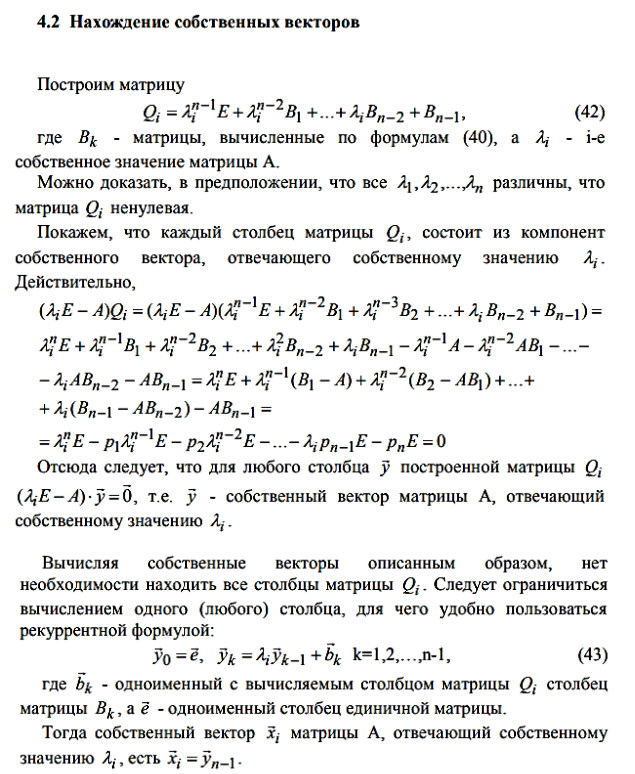
for i in range(-500, 500):

x = bisection(i, i+1, p\_list)

if x != 0:

res.append(x)

print(x)



y0 = [1,0,0,0]

y = []

for i in range(N):

y1 = vector\_add(scalar\_multiply\_vector(res[i], y0), B\_list[1])

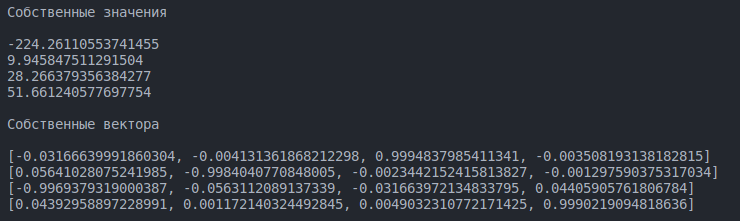
y2 = vector\_add(scalar\_multiply\_vector(res[i], y1), B\_list[2])

y3 = vector\_add(scalar\_multiply\_vector(res[i], y2), B\_list[3])

t = length(y3)

print(t)

y.append(t)



Проверка

for i in range (len(x)):

res = vectors\_sub(MatrixVectorMult(A, x[i]), scalar\_multiply\_vector(l[i],x[i]))

print(res)

