```
# Set the parameters and functions
c :='c':
d :='d':
u :='u':
A := [4, 405/100, 409/100, 4108/1000]:
L := (-5·d^2 - 40 d - 80) u^6 + (90 c^3 + 15 c^4 - 480 d) u^5 + (20 c^5 - 27 d^4 - 1200 d^2 - 344 d^3) u^4
     + (74 c^6 + 60 c^5 - 1088 d^4 - 1600 d^3) u^3 + (20 c^7 + 197 c^6 - 984 d^5 - 1200 d^4) u^2 + (10 c^7
     + 15 c^8 - 320 d^6 - 480 d^5) u - 5 d^8 - 80 d^6 - 40 d^7 :
print(Output);
# find Sturm's sequence``
 with(ArrayTools) :
 for j from 1 by 1 to Size(A, 2) - 1 do
 c := A[j + 1];
 d := A[j];
 u :='u':
 S := sturmseq(L, u);
 signnum := sturm(S, u, 0, 4.2);
 with(ArrayTools) :
 Slength := Size(S, 2);
X := Array(1 .. Slength);
Y := Array(1 .. Slength);

   for i from 1 to Slength do
 # Find sgn [s_{L_i}(0)]
     u := 0;
     X[i] := signum(S[i]);
 # Find sgn [s_{L_i}(4.2)]
     u := 42/10 :
     Y[i] := signum(S[i]);
   end do;
 # show the final results
   print(['a'[j - 1],'a'[j], sgn(s['L'[j - 1]](0)), sgn(s['L'[j - 1]](4.2))] = [evalf(d, 3), evalf(c, 3),
     X, Y]) ;
   end do:
```

Output

$$\left[a_0, a_1, sgn\left(s_{L_0}(0)\right), sgn\left(s_{L_0}(4.2)\right)\right] = \left[4., 4.05, \left[\begin{matrix} -1 & -1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right], \left[\begin{matrix} -1 & 1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right]\right]$$

$$\left[a_1, a_2, sgn\left(s_{L_1}(0)\right), sgn\left(s_{L_1}(4.2)\right)\right] = \left[4.05, 4.09, \left[\begin{matrix} -1 & -1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right], \left[\begin{matrix} -1 & 1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right]\right]$$

$$\left[a_2, a_3, sgn\left(s_{L_2}(0)\right), sgn\left(s_{L_2}(4.2)\right)\right] = \left[4.09, 4.11, \left[\begin{matrix} -1 & -1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right], \left[\begin{matrix} -1 & 1 & 1 & -1 & 1 & 1 & -1 \end{matrix}\right]\right] \quad (1)$$