```
> # Set the parameters and functions
  a :='a':
  b :='b':
  u :='u':
  A1 := 1458*u^8 + (11664*a - 486*b^2)*u^7 + (-5346*b^3 + 345272*a^2 - 1215*b^4)*u^6
      + (966880*a^3 - 483850*b^4 + 1053*a^6 + 1458*a^5)*u^5 + (175028*a^6 + 1134*a^7
      + 959180*a^4 - 81*b^8 - 895924*b^5)*u^4 + (-383514*b^6 - 15271*b^8 + 378320*a^5
      + 156598*a^7)*u^3 + (73720*a^6 + 9158*a^7 - 15757*b^8)*u^2 + (-24262*b^8
      + 16448*a^7)*u - 6318*b^8 :
    print(Output);
  # find Sturm's sequence
  for j from 0 by 1 to 4 do
  a := 4106/1000 + (j + 1)/5 . (417/100 - 4106/1000) :
  b := 4106/1000 + j/5 . (417/100 - 4106/1000) :
  u :='u':
  S := sturmseq(A1, u);
  with(ArrayTools) :
  Slength := Size(S, 2);
  X := Array(1 .. Slength);
  Y := Array(1 .. Slength);

     for i from 1 to Slength do
   # Find sgn [s_'A_i'(0)]
       u := 0;
       X[i] := signum(S[i]);
   # Find sgn [s_'A_i'(6)]
       u := 6 :
       Y[i] := signum(S[i]);
     end do;
    # show the final results
  print([ 'a'[j],'a'[j + 1], sgn(s['A'[j]](0)), sgn(s['A'[j]](6))] = [evalf (b, 5),
      evalf (a, 5), X, Y]) ;
  end do:
```

Output

$$\left[a_0, a_1, sgn\left(s_{A_0}(0)\right), sgn\left(s_{A_0}(6)\right)\right] = \left[4.1060, 4.1188, \left[\begin{matrix} -1 & -1 & -1 & 1 & -1 & 1 & 1 & 1 & 1 \end{matrix}\right], \left[\begin{matrix} -1 & -1 & 1 & 1 & -1 & -1 & -1 & 1 & 1 \end{matrix}\right]\right]$$

$$\left[a_1, a_2, sgn\left(s_{A_1}(0)\right), sgn\left(s_{A_1}(6)\right)\right] = \left[4.1188, 4.1316, \left[\begin{matrix} -1 & -1 & -1 & 1 & -1 & 1 & 1 & 1 & 1 \end{matrix}\right], \left[\begin{matrix} -1 & -1 & 1 & 1 & -1 & -1 & -1 & 1 & 1 \end{matrix}\right]\right]$$

$$\left[a_2, a_3, sgn\left(s_{A_2}(0)\right), sgn\left(s_{A_2}(6)\right)\right] = \left[4.1316, 4.1444, \left[\begin{matrix} -1 & -1 & -1 & 1 & -1 & 1 & 1 & 1 & 1 \end{matrix}\right], \left[\begin{matrix} -1 & -1 & 1 & 1 & -1 & -1 & -1 & 1 & 1 \end{matrix}\right]\right]$$

$$\left[a_3, a_4, sgn\left(s_{A_3}(0)\right), sgn\left(s_{A_3}(6)\right)\right] = \left[4.1444, 4.1572, \left[\begin{matrix} -1 & -1 & -1 & 1 & -1 & 1 & 1 & 1 & 1 \end{matrix}\right], \left[\begin{matrix} -1 & -1 & 1 & 1 & -1 & -1 & -1 & 1 & 1 \end{matrix}\right]\right]$$

$$\left[a_4, a_5, sgn\left(s_{A_4}(0)\right), sgn\left(s_{A_4}(6)\right)\right] = \left[4.1572, 4.1700, \left[\begin{matrix} -1 & -1 & -1 & 1 & -1 & 1 & 1 & 1 & 1 \end{matrix}\right], \left[\begin{matrix} -1 & -1 & 1 & 1 & -1 & -1 & -1 & 1 & 1 \end{matrix}\right]\right] \quad \textbf{(1)}$$

>