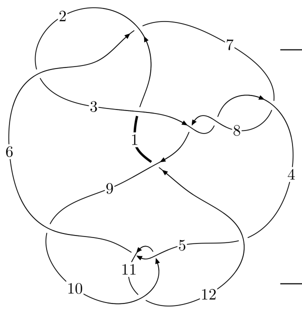
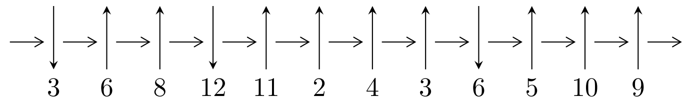
$12n_{0564}$ ($K12n_{0564}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$5{,}11 \xrightarrow[c_5]{} 3{,}6 \xrightarrow[c_2]{} 2 \xrightarrow[c_1]{} 1 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_4]{} 4 \xrightarrow[c_9]{} 9 \xrightarrow[c_8]{} 8 \xrightarrow[c_7]{} 7 \twoheadrightarrow c_3, c_6, c_{12}$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$I_1^u = \langle -u^{16} - 3u^{15} + \cdots + b + 3,\ 3u^{16} + 7u^{15} + \cdots + 2a - 7,\ u^{17} + 3u^{16} + \cdots - 5u - 2\rangle$$

$$I_2^u = \langle u^5a + u^5 - 2u^3a + u^2a - u^3 + 2au + b + u + 1,\ 2u^4a + 2u^5 - u^3a - u^4 - 2u^2a - 2u^3 + a^2 + 2au + u^2 - u,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle$$

$$I_3^u = \langle u^6 - 2u^4 + u^3 + u^2 + b - u + 1,\ u^8 + u^7 - 3u^6 - 2u^5 + 3u^4 + u^3 + u^2 + a + u - 2,\ u^{10} - 3u^8 + 4u^6 - u^4 -$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.

$$\boldsymbol{I_1^u = \langle -u^{16}-3u^{15}+\cdots+b+3,\ 3u^{16}+7u^{15}+\cdots+2a-7,\ u^{17}+3u^{16}+\cdots-5u-2\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-\frac{3}{2}u^{16}-\frac{7}{2}u^{15}+\cdots+\frac{11}{2}u+\frac{7}{2}\\ u^{16}+3u^{15}+\cdots-5u-3\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-\frac{5}{2}u^{16}-\frac{11}{2}u^{15}+\cdots+\frac{17}{2}u+\frac{9}{2}\\ 2u^{16}+5u^{15}+\cdots-8u-5\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u^{11}-2u^9+2u^7+u^3\\ -u^{13}+3u^{11}-5u^9+4u^7-2u^5-u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^3\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^6-u^4+1\\-u^6+2u^4-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}\frac{1}{2}u^{16}+\frac{3}{2}u^{15}+\cdots-\frac{5}{2}u-\frac{3}{2}\\ u^{16}+2u^{15}+\cdots-2u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{1}{2}u^{16}-\frac{1}{2}u^{15}+\cdots+\frac{1}{2}u-\frac{1}{2}\\ u^{16}+2u^{15}+\cdots-2u-1\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{16}-4u^{15}+6u^{14}+22u^{13}+2u^{12}-44u^{11}-38u^{10}+30u^9+64u^8+26u^7-36u^6-48u^5-16u^4+18u^3+12u^2+8u+6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 30u^{16} + \cdots - 8u - 1$
c_2, c_3, c_6 c_7, c_8	$u^{17} + 15u^{15} + \cdots + 2u - 1$
c_4, c_9	$u^{17} + 9u^{16} + \cdots - 77u - 26$
c_5, c_{10}	$u^{17} + 3u^{16} + \cdots - 5u - 2$
c_{11}	$u^{17} - 9u^{16} + \cdots + 5u - 4$
c_{12}	$u^{17} + u^{16} + \cdots + 953u - 416$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} - 98y^{16} + \cdots + 64y - 1$
c_2, c_3, c_6 c_7, c_8	$y^{17} + 30y^{16} + \cdots - 8y - 1$
c_4, c_9	$y^{17} + 11y^{16} + \cdots + 3589y - 676$
c_5, c_{10}	$y^{17} - 9y^{16} + \cdots + 5y - 4$
c_{11}	$y^{17} - y^{16} + \cdots + 193y - 16$
c_{12}	$y^{17} + 83y^{16} + \cdots + 3035633y - 173056$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.270803 + 0.900641I$ $a = -0.709209 - 0.184245I$ $b = -0.73238 - 2.39254I$	$-15.8747 + 5.8792I$	$1.30073 - 1.97139I$
$u = -0.270803 - 0.900641I$ $a = -0.709209 + 0.184245I$ $b = -0.73238 + 2.39254I$	$-15.8747 - 5.8792I$	$1.30073 + 1.97139I$
$u = -0.810610 + 0.750728I$ $a = -1.317050 + 0.001505I$ $b = 0.058875 + 0.461436I$	$-19.2384 - 2.7966I$	$0.86008 + 2.64584I$
$u = -0.810610 - 0.750728I$ $a = -1.317050 - 0.001505I$ $b = 0.058875 - 0.461436I$	$-19.2384 + 2.7966I$	$0.86008 - 2.64584I$
$u = -0.776721 + 0.418654I$ $a = 0.541225 + 0.547668I$ $b = -0.518708 - 0.343588I$	$-0.92435 - 1.82362I$	$3.05958 + 5.69158I$
$u = -0.776721 - 0.418654I$ $a = 0.541225 - 0.547668I$ $b = -0.518708 + 0.343588I$	$-0.92435 + 1.82362I$	$3.05958 - 5.69158I$
$u = 1.158560 + 0.445647I$ $a = -0.511951 + 0.740081I$ $b = 0.883342 + 0.177811I$	$4.23482 + 2.69674I$	$10.58660 + 0.80633I$
$u = 1.158560 - 0.445647I$ $a = -0.511951 - 0.740081I$ $b = 0.883342 - 0.177811I$	$4.23482 - 2.69674I$	$10.58660 - 0.80633I$
$u = -1.172560 + 0.461545I$ $a = -1.225960 + 0.029576I$ $b = 1.068970 - 0.795251I$	$4.11934 - 5.61810I$	$10.07697 + 8.39649I$
$u = -1.172560 - 0.461545I$ $a = -1.225960 - 0.029576I$ $b = 1.068970 + 0.795251I$	$4.11934 + 5.61810I$	$10.07697 - 8.39649I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.277260 + 0.264559I$ $a = 0.07926 - 2.43683I$ $b = -1.56412 + 1.91811I$	$-10.78020 - 2.11031I$	$5.71043 + 0.08866I$
$u = 1.277260 - 0.264559I$ $a = 0.07926 + 2.43683I$ $b = -1.56412 - 1.91811I$	$-10.78020 + 2.11031I$	$5.71043 - 0.08866I$
$u = -0.050223 + 0.684600I$ $a = 0.511482 - 0.219170I$ $b = 0.581679 + 0.400436I$	$0.95257 + 1.33285I$	$6.82195 - 5.20077I$
$u = -0.050223 - 0.684600I$ $a = 0.511482 + 0.219170I$ $b = 0.581679 - 0.400436I$	$0.95257 - 1.33285I$	$6.82195 + 5.20077I$
$u = 0.682195$ $a = 0.679402$ $b = 0.0468590$	0.845049	13.0200
$u = -1.196000 + 0.589565I$ $a = 2.54251 - 1.12472I$ $b = -0.80109 + 2.93271I$	$-13.0820 - 11.3274I$	$4.07376 + 5.51607I$
$u = -1.196000 - 0.589565I$ $a = 2.54251 + 1.12472I$ $b = -0.80109 - 2.93271I$	$-13.0820 + 11.3274I$	$4.07376 - 5.51607I$

II. $\boldsymbol{I^u_2 = \langle u^5a + u^5 - 2u^3a + u^2a - u^3 + 2au + b + u + 1,\ 2u^4a + 2u^5 + \cdots + a^2 - u,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ -u^5a - u^5 + 2u^3a - u^2a + u^3 - 2au - u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^5a + u^5 - 2u^3a - u^3 + 2au + a + u + 1 \\ -u^5a + u^4a - 2u^5 + 2u^3a + u^4 - 2u^2a + 2u^3 - 2au - 2u^2 + a - u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2u^3 + 1 \\ -2u^3 + 2u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^5 - 2u^3 + u \\ -u^5 + u^4 + 2u^3 - u^2 - u + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^5a - u^3a + 2u^4 - u^3 + au - 2u^2 + a + 2u + 1 \\ -u^5a + u^4a - u^5 + u^3a - 2u^2a + 2u^3 - u^2 + a - 2u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^5a - u^5 + 2u^3a + 2u^4 - u^2a + u^3 - 2au - 2u^2 + a + u + 1 \\ u^5a - 2u^3a - u^4 + u^2a + 2au - a - u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^4 + 4u^2 - 4u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} + 15u^{11} + \cdots + 1324u + 289$
c_2, c_3, c_6 c_7, c_8	$u^{12} - u^{11} + \cdots - 28u + 17$
c_4, c_9, c_{11}	$(u^6 - 3u^5 + 5u^4 - 4u^3 + 2u^2 - u + 1)^2$
c_5, c_{10}, c_{12}	$(u^6 - u^5 - u^4 + 2u^3 - u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 13y^{11} + \cdots + 423772y + 83521$
c_2, c_3, c_6 c_7, c_8	$y^{12} + 15y^{11} + \cdots + 1324y + 289$
c_4, c_9, c_{11}	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^2$
c_5, c_{10}, c_{12}	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.002190 + 0.295542I$ $a = \ \ 0.912198 - 0.739675I$ $b = -0.414477 - 0.040596I$	$-1.39926 - 0.92430I$	$7.71672 + 0.79423I$
$u = -1.002190 + 0.295542I$ $a = \ \ 1.20218 + 2.00149I$ $b = -1.84373 - 0.52857I$	$-1.39926 - 0.92430I$	$7.71672 + 0.79423I$
$u = -1.002190 - 0.295542I$ $a = \ \ 0.912198 + 0.739675I$ $b = -0.414477 + 0.040596I$	$-1.39926 + 0.92430I$	$7.71672 - 0.79423I$
$u = -1.002190 - 0.295542I$ $a = \ \ 1.20218 - 2.00149I$ $b = -1.84373 + 0.52857I$	$-1.39926 + 0.92430I$	$7.71672 - 0.79423I$
$u = \ \ 0.428243 + 0.664531I$ $a = -0.486207 + 0.830594I$ $b = \ \ 0.015656 - 0.966738I$	$-5.18047 - 0.92430I$	$0.283283 + 0.794226I$
$u = \ \ 0.428243 + 0.664531I$ $a = -0.860954 - 0.361329I$ $b = -1.09861 + 1.55912I$	$-5.18047 - 0.92430I$	$0.283283 + 0.794226I$
$u = \ \ 0.428243 - 0.664531I$ $a = -0.486207 - 0.830594I$ $b = \ \ 0.015656 + 0.966738I$	$-5.18047 + 0.92430I$	$0.283283 - 0.794226I$
$u = \ \ 0.428243 - 0.664531I$ $a = -0.860954 + 0.361329I$ $b = -1.09861 - 1.55912I$	$-5.18047 + 0.92430I$	$0.283283 - 0.794226I$
$u = \ \ 1.073950 + 0.558752I$ $a = -1.37466 - 0.68992I$ $b = \ \ 0.524769 + 0.629076I$	$-3.28987 + 5.69302I$	$4.00000 - 5.51057I$
$u = \ \ 1.073950 + 0.558752I$ $a = \ \ 2.60745 - 0.30647I$ $b = -1.68361 - 1.82922I$	$-3.28987 + 5.69302I$	$4.00000 - 5.51057I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.073950 - 0.558752I$ $a = -1.37466 + 0.68992I$ $b = 0.524769 - 0.629076I$	$-3.28987 - 5.69302I$	$4.00000 + 5.51057I$
$u = 1.073950 - 0.558752I$ $a = 2.60745 + 0.30647I$ $b = -1.68361 + 1.82922I$	$-3.28987 - 5.69302I$	$4.00000 + 5.51057I$

III. $\boldsymbol{I^u_3 =}$
$\boldsymbol{\langle u^6 - 2u^4 + u^3 + u^2 + b - u + 1,\ u^8 + u^7 + \cdots + a - 2,\ u^{10} - 3u^8 + 4u^6 - u^4 - u^2 + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^8 - u^7 + 3u^6 + 2u^5 - 3u^4 - u^3 - u^2 - u + 2 \\ -u^6 + 2u^4 - u^3 - u^2 + u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^9 - u^8 - 3u^7 + 3u^6 + 3u^5 - 3u^4 + u^3 - u^2 - 2u + 2 \\ -u^9 + 3u^7 - u^6 - 3u^5 + 2u^4 - u^3 - u^2 + 2u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^9 - 2u^7 + u^5 + 2u^3 - u \\ -u^9 + 3u^7 - 3u^5 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3 \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^6 - u^4 + 1 \\ -u^6 + 2u^4 - u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^8 + u^7 + 2u^6 - 2u^5 - 2u^4 + u^3 - u^2 + u + 1 \\ -u^9 + u^8 + 2u^7 - 2u^6 - u^5 + 2u^4 - 2u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^8 + u^7 + 2u^6 - 2u^5 - 2u^4 + 2u^3 - u^2 + u + 1 \\ -u^9 + u^8 + 2u^7 - 2u^6 - 2u^5 + 2u^4 - u^3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^8 + 8u^6 - 8u^4 - 4u^2 + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^{10}$
c_2, c_3, c_6 c_7, c_8	$(u^2+1)^5$
c_4, c_9	$u^{10}+5u^8+8u^6+3u^4-u^2+1$
c_5, c_{10}	$u^{10}-3u^8+4u^6-u^4-u^2+1$
c_{11}	$(u^5-3u^4+4u^3-u^2-u+1)^2$
c_{12}	$(u^5+u^4-2u^3-u^2+u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^{10}$
c_2, c_3, c_6 c_7, c_8	$(y+1)^{10}$
c_4, c_9	$(y^5+5y^4+8y^3+3y^2-y+1)^2$
c_5, c_{10}	$(y^5-3y^4+4y^3-y^2-y+1)^2$
c_{11}	$(y^5-y^4+8y^3-3y^2+3y-1)^2$
c_{12}	$(y^5-5y^4+8y^3-3y^2-y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.822375+0.339110I$ $a=\ \ 1.88547+1.25135I$ $b=-1.75626-0.65077I$	$-2.96077-1.53058I$	$0.51511+4.43065I$
$u=-0.822375-0.339110I$ $a=\ \ 1.88547-1.25135I$ $b=-1.75626+0.65077I$	$-2.96077+1.53058I$	$0.51511-4.43065I$
$u=\ \ 0.822375+0.339110I$ $a=-0.32986-1.50891I$ $b=-0.656443+0.030936I$	$-2.96077+1.53058I$	$0.51511-4.43065I$
$u=\ \ 0.822375-0.339110I$ $a=-0.32986+1.50891I$ $b=-0.656443-0.030936I$	$-2.96077-1.53058I$	$0.51511+4.43065I$
$u=\ \ 0.766826I$ $a=\ \ 0.821196+0.370286I$ $b=\ \ 0.482881+1.217740I$	-0.888787	1.48110
$u=\ \ -0.766826I$ $a=\ \ 0.821196-0.370286I$ $b=\ \ 0.482881-1.217740I$	-0.888787	1.48110
$u=-1.200150+0.455697I$ $a=-1.56305+1.07974I$ $b=\ \ 0.74575-2.04068I$	$2.58269-4.40083I$	$4.74431+3.49859I$
$u=-1.200150-0.455697I$ $a=-1.56305-1.07974I$ $b=\ \ 0.74575+2.04068I$	$2.58269+4.40083I$	$4.74431-3.49859I$
$u=\ \ 1.200150+0.455697I$ $a=\ \ 0.186244+1.292420I$ $b=\ \ 1.18408-0.79689I$	$2.58269+4.40083I$	$4.74431-3.49859I$
$u=\ \ 1.200150-0.455697I$ $a=\ \ 0.186244-1.292420I$ $b=\ \ 1.18408+0.79689I$	$2.58269-4.40083I$	$4.74431+3.49859I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^{10})(u^{12}+15u^{11}+\cdots+1324u+289)$ $\cdot(u^{17}+30u^{16}+\cdots-8u-1)$
c_2, c_3, c_6 c_7, c_8	$((u^2+1)^5)(u^{12}-u^{11}+\cdots-28u+17)(u^{17}+15u^{15}+\cdots+2u-1)$
c_4, c_9	$((u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2)(u^{10}+5u^8+8u^6+3u^4-u^2+1)$ $\cdot(u^{17}+9u^{16}+\cdots-77u-26)$
c_5, c_{10}	$(u^6-u^5-u^4+2u^3-u+1)^2(u^{10}-3u^8+4u^6-u^4-u^2+1)$ $\cdot(u^{17}+3u^{16}+\cdots-5u-2)$
c_{11}	$(u^5-3u^4+4u^3-u^2-u+1)^2(u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2$ $\cdot(u^{17}-9u^{16}+\cdots+5u-4)$
c_{12}	$(u^5+u^4-2u^3-u^2+u-1)^2(u^6-u^5-u^4+2u^3-u+1)^2$ $\cdot(u^{17}+u^{16}+\cdots+953u-416)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^{10})(y^{12}-13y^{11}+\cdots+423772y+83521)$ $\cdot(y^{17}-98y^{16}+\cdots+64y-1)$
c_2, c_3, c_6 c_7, c_8	$((y+1)^{10})(y^{12}+15y^{11}+\cdots+1324y+289)$ $\cdot(y^{17}+30y^{16}+\cdots-8y-1)$
c_4, c_9	$(y^5+5y^4+8y^3+3y^2-y+1)^2(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot(y^{17}+11y^{16}+\cdots+3589y-676)$
c_5, c_{10}	$(y^5-3y^4+4y^3-y^2-y+1)^2(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot(y^{17}-9y^{16}+\cdots+5y-4)$
c_{11}	$(y^5-y^4+8y^3-3y^2+3y-1)^2(y^6+y^5+5y^4+6y^2+3y+1)^2$ $\cdot(y^{17}-y^{16}+\cdots+193y-16)$
c_{12}	$(y^5-5y^4+8y^3-3y^2-y-1)^2(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot(y^{17}+83y^{16}+\cdots+3035633y-173056)$