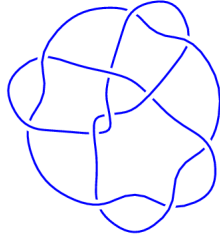
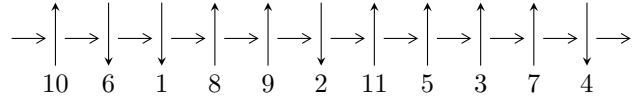


11a₃₃₀ (K11a₃₃₀)

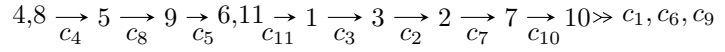


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = \bigcap_{i=1}^2 I_i^u$$

$$I_1^u = \langle u^{15} - 2u^{14} - 7u^{13} + 16u^{12} + 15u^{11} - 46u^{10} - 3u^9 + 54u^8 - 25u^7 - 16u^6 + 26u^5 - 12u^4 - 6u^3 + 7u^2 - 2u - u^{13} - u^{12} - 7u^{11} + 8u^{10} + 16u^9 - 22u^8 - 10u^7 + 23u^6 - 7u^5 - 5u^4 + 7u^3 - 3u^2 + b - u + 1, -u^{14} + 2u^{13} + \dots + a + 2 \rangle$$

$$I_2^u = \langle u^{59} - 3u^{58} + \dots - 68u - 47, -1.12011 \times 10^{74}u^{58} + 2.75629 \times 10^{74}u^{57} + \dots + 3.44884 \times 10^{73}b - 1.05135 \times 10^{76}, -1.49619 \times 10^{76}u^{58} + 3.79895 \times 10^{76}u^{57} + \dots + 1.62096 \times 10^{75}a - 1.57571 \times 10^{78} \rangle$$

There are 2 irreducible components with 74 representations.

¹The knot diagram image is adapter from “C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, <http://www.indiana.edu/~knotinfo>”

$$I_1^u = \langle u^{15} - 2u^{14} + \dots - 2u - 1, u^{13} - u^{12} + \dots + b + 1, -u^{14} + 2u^{13} + \dots + a + 2 \rangle$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{14} - 2u^{13} + \dots + 6u - 2 \\ -u^{13} + u^{12} + \dots + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{14} - u^{13} + \dots + 5u - 1 \\ -u^{13} + u^{12} + \dots + u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^8 - 5u^6 + u^5 + 7u^4 - 3u^3 - u^2 + 2u - 1 \\ -u^{13} + u^{12} + \dots + u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^8 - u^7 - 5u^6 + 5u^5 + 7u^4 - 7u^3 - u^2 + 2u - 2 \\ -u^{14} + 9u^{12} + \dots - 2u - 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{14} + 2u^{13} + \dots - 5u + 2 \\ -u^{14} + u^{13} + \dots + 3u^2 - 2u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^5 - 3u^3 + 2u \\ u^{14} - u^{13} + \dots + u^2 + 2u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^5 - 3u^3 + 2u \\ u^{14} - u^{13} + \dots + u^2 + 2u \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.62956 - 0.11015I$ $a = 1.018688 + 0.151448I$ $b = 0.429910 - 1.194277I$	$14.4815 + 1.9499I$	$11.70621 - 0.15719I$
$u = -1.62956 + 0.11015I$ $a = 1.018688 - 0.151448I$ $b = 0.429910 + 1.194277I$	$14.4815 - 1.9499I$	$11.70621 + 0.15719I$
$u = -1.28962$ $a = 0.514199$ $b = -0.581197$	3.36193	14.4311
$u = -0.859236 - 0.096648I$ $a = -0.290049 + 0.225922I$ $b = -0.455127 - 0.900633I$	$1.37447 - 1.85175I$	$6.24665 - 0.44232I$
$u = -0.859236 + 0.096648I$ $a = -0.290049 - 0.225922I$ $b = -0.455127 + 0.900633I$	$1.37447 + 1.85175I$	$6.24665 + 0.44232I$
$u = -0.257945$ $a = -3.61884$ $b = -0.931093$	-0.131193	-4.21559
$u = 0.147449 - 0.698939I$ $a = 0.14152 + 2.06872I$ $b = 0.102496 + 1.303926I$	$7.44398 + 1.12715I$	$9.32440 - 0.18246I$
$u = 0.147449 + 0.698939I$ $a = 0.14152 - 2.06872I$ $b = 0.102496 - 1.303926I$	$7.44398 - 1.12715I$	$9.32440 + 0.18246I$
$u = 0.488833 - 0.456106I$ $a = 0.60478 + 1.47650I$ $b = 0.258245 - 0.780965I$	$5.17256 + 2.76956I$	$12.90399 - 4.24420I$
$u = 0.488833 + 0.456106I$ $a = 0.60478 - 1.47650I$ $b = 0.258245 + 0.780965I$	$5.17256 - 2.76956I$	$12.90399 + 4.24420I$

Solution to I_1^μ	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.318057 - 0.189471I$ $a = -0.574725 + 0.296326I$ $b = 0.214298 + 0.558537I$	$8.33813 - 5.13031I$	$13.01330 + 4.52627I$
$u = 1.318057 + 0.189471I$ $a = -0.574725 - 0.296326I$ $b = 0.214298 - 0.558537I$	$8.33813 + 5.13031I$	$13.01330 - 4.52627I$
$u = 1.52270$ $a = -0.865968$ $b = -1.27999$	6.18333	5.55828
$u = 1.54689 - 0.23410I$ $a = -0.914905 + 0.329736I$ $b = -0.15368 - 1.44939I$	$12.76516 - 4.69419I$	$12.91855 + 3.93139I$
$u = 1.54689 + 0.23410I$ $a = -0.914905 - 0.329736I$ $b = -0.15368 + 1.44939I$	$12.76516 + 4.69419I$	$12.91855 - 3.93139I$

$$\text{II. } I_2^u = \langle u^{59} - 3u^{58} + \dots - 68u - 47, -1.12 \times 10^{74} u^{58} + 2.76 \times 10^{74} u^{57} + \dots + 3.45 \times 10^{73} b - 1.05 \times 10^{76}, -1.50 \times 10^{76} u^{58} + 3.80 \times 10^{76} u^{57} + \dots + 1.62 \times 10^{75} a - 1.58 \times 10^{78} \rangle$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 9.23031u^{58} - 23.4365u^{57} + \dots + 3493.41u + 972.086 \\ 3.24779u^{58} - 7.99193u^{57} + \dots + 1122.55u + 304.842 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 5.98251u^{58} - 15.4445u^{57} + \dots + 2370.86u + 667.245 \\ 3.24779u^{58} - 7.99193u^{57} + \dots + 1122.55u + 304.842 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 2.41804u^{58} - 6.03112u^{57} + \dots + 1112.39u + 331.970 \\ 3.35170u^{58} - 8.54361u^{57} + \dots + 1242.14u + 331.682 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 5.18004u^{58} - 13.0960u^{57} + \dots + 2212.35u + 639.499 \\ 2.03204u^{58} - 5.19353u^{57} + \dots + 732.562u + 188.668 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 3.24999u^{58} - 7.66870u^{57} + \dots + 1187.04u + 318.226 \\ 2.73447u^{58} - 7.36256u^{57} + \dots + 1055.99u + 271.177 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.648359u^{58} + 1.03490u^{57} + \dots + 370.690u + 121.526 \\ 2.37556u^{58} - 5.68960u^{57} + \dots + 673.282u + 160.207 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.648359u^{58} + 1.03490u^{57} + \dots + 370.690u + 121.526 \\ 2.37556u^{58} - 5.68960u^{57} + \dots + 673.282u + 160.207 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.63522 - 0.16039I$ $a = 0.003749 - 0.275010I$ $b = 0.23042 + 1.41743I$	$12.00310 + 1.72842I$	$11.74362 - 0.30714I$
$u = -1.63522 + 0.16039I$ $a = 0.003749 + 0.275010I$ $b = 0.23042 - 1.41743I$	$12.00310 - 1.72842I$	$11.74362 + 0.30714I$
$u = -1.60407 - 0.19460I$ $a = -0.938387 - 0.141608I$ $b = -0.58039 + 1.68597I$	$13.1880 + 8.2730I$	$10.57843 - 5.37996I$
$u = -1.60407 + 0.19460I$ $a = -0.938387 + 0.141608I$ $b = -0.58039 - 1.68597I$	$13.1880 - 8.2730I$	$10.57843 + 5.37996I$
$u = -1.58483 - 0.22376I$ $a = 0.987123 + 0.209265I$ $b = 0.273747 - 1.367094I$	$11.87835 + 3.53773I$	$8.99766 + 0.19863I$
$u = -1.58483 + 0.22376I$ $a = 0.987123 - 0.209265I$ $b = 0.273747 + 1.367094I$	$11.87835 - 3.53773I$	$8.99766 - 0.19863I$
$u = -1.57638 - 0.12949I$ $a = 0.436873 + 0.982897I$ $b = 0.186350 - 1.361054I$	$11.80620 + 7.29433I$	$11.73130 - 6.22760I$
$u = -1.57638 + 0.12949I$ $a = 0.436873 - 0.982897I$ $b = 0.186350 + 1.361054I$	$11.80620 - 7.29433I$	$11.73130 + 6.22760I$
$u = -1.56748$ $a = -0.881028$ $b = -1.73811$	7.31990	14.1720
$u = -1.50589$ $a = 0.891008$ $b = 0.701190$	7.41921	13.8922

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.44030 - 0.20799I$ $a = 0.221441 + 0.421025I$ $b = 0.542037 - 0.003122I$	$7.30101 + 4.74836I$	$5.03007 - 2.51272I$
$u = -1.44030 + 0.20799I$ $a = 0.221441 - 0.421025I$ $b = 0.542037 + 0.003122I$	$7.30101 - 4.74836I$	$5.03007 + 2.51272I$
$u = -1.072726 - 0.002898I$ $a = -0.708113 - 0.180531I$ $b = -0.679774 + 0.774687I$	$1.97600 + 2.55273I$	$10.26685 - 5.82236I$
$u = -1.072726 + 0.002898I$ $a = -0.708113 + 0.180531I$ $b = -0.679774 - 0.774687I$	$1.97600 - 2.55273I$	$10.26685 + 5.82236I$
$u = -0.870656 - 0.926885I$ $a = 0.986934 - 0.667144I$ $b = 0.31968 - 1.41732I$	$10.3757 + 9.8566I$	$10.78324 - 6.83815I$
$u = -0.870656 + 0.926885I$ $a = 0.986934 + 0.667144I$ $b = 0.31968 + 1.41732I$	$10.3757 - 9.8566I$	$10.78324 + 6.83815I$
$u = -0.655609 - 0.435361I$ $a = 1.52726 - 0.50194I$ $b = 0.899285 - 0.164244I$	$5.22435 + 5.58403I$	$7.88408 - 6.48040I$
$u = -0.655609 + 0.435361I$ $a = 1.52726 + 0.50194I$ $b = 0.899285 + 0.164244I$	$5.22435 - 5.58403I$	$7.88408 + 6.48040I$
$u = -0.647619 - 0.225990I$ $a = 1.90147 - 0.85004I$ $b = 0.42877 - 1.41249I$	$9.17648 - 0.45587I$	$13.79187 - 0.50236I$
$u = -0.647619 + 0.225990I$ $a = 1.90147 + 0.85004I$ $b = 0.42877 + 1.41249I$	$9.17648 + 0.45587I$	$13.79187 + 0.50236I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.507724 - 1.289266I$ $a = -0.303043 + 0.951975I$ $b = 0.042705 + 1.359629I$	$9.00112 - 2.68298I$	$13.37182 + 3.04466I$
$u = -0.507724 + 1.289266I$ $a = -0.303043 - 0.951975I$ $b = 0.042705 - 1.359629I$	$9.00112 + 2.68298I$	$13.37182 - 3.04466I$
$u = -0.486013 - 0.140699I$ $a = -0.526562 - 0.989442I$ $b = -0.351844 + 0.983970I$	$0.77762 + 2.37468I$	$-0.58026 - 5.71266I$
$u = -0.486013 + 0.140699I$ $a = -0.526562 + 0.989442I$ $b = -0.351844 - 0.983970I$	$0.77762 - 2.37468I$	$-0.58026 + 5.71266I$
$u = -0.485094 - 0.213274I$ $a = -3.30156 + 0.35475I$ $b = 0.001691 + 1.297034I$	$8.58837 + 2.03485I$	$15.0115 - 3.6514I$
$u = -0.485094 + 0.213274I$ $a = -3.30156 - 0.35475I$ $b = 0.001691 - 1.297034I$	$8.58837 - 2.03485I$	$15.0115 + 3.6514I$
$u = -0.462881 - 0.565944I$ $a = -0.55152 + 1.59437I$ $b = 0.0819864 + 0.0135157I$	$4.44971 - 2.14107I$	$5.59927 - 1.54259I$
$u = -0.462881 + 0.565944I$ $a = -0.55152 - 1.59437I$ $b = 0.0819864 - 0.0135157I$	$4.44971 + 2.14107I$	$5.59927 + 1.54259I$
$u = -0.020007 - 0.394814I$ $a = -0.649909 - 1.080939I$ $b = -0.564266 - 0.401283I$	$-0.96759 - 1.06374I$	$-3.58491 + 4.50505I$
$u = -0.020007 + 0.394814I$ $a = -0.649909 + 1.080939I$ $b = -0.564266 + 0.401283I$	$-0.96759 + 1.06374I$	$-3.58491 - 4.50505I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.415938 - 0.579248I$ $a = 0.846887 - 0.499107I$ $b = 0.574644 - 0.026281I$	$1.35011 - 1.88524I$	$3.00166 + 3.83760I$
$u = 0.415938 + 0.579248I$ $a = 0.846887 + 0.499107I$ $b = 0.574644 + 0.026281I$	$1.35011 + 1.88524I$	$3.00166 - 3.83760I$
$u = 0.452712$ $a = 1.61649$ $b = 0.0591731$	0.981228	11.9021
$u = 0.453128$ $a = -2.33221$ $b = -1.18104$	0.221271	19.3562
$u = 0.481157 - 0.783711I$ $a = 0.87764 + 1.18816I$ $b = -0.033355 + 1.312053I$	$4.90675 + 0.17949I$	$6.45758 + 0.24351I$
$u = 0.481157 + 0.783711I$ $a = 0.87764 - 1.18816I$ $b = -0.033355 - 1.312053I$	$4.90675 - 0.17949I$	$6.45758 - 0.24351I$
$u = 0.547371 - 0.629034I$ $a = 0.275474 - 0.246041I$ $b = 0.362689 - 1.069455I$	$4.32344 + 1.31427I$	$8.87224 + 0.47673I$
$u = 0.547371 + 0.629034I$ $a = 0.275474 + 0.246041I$ $b = 0.362689 + 1.069455I$	$4.32344 - 1.31427I$	$8.87224 - 0.47673I$
$u = 0.566889 - 0.487295I$ $a = 1.27041 - 0.78556I$ $b = 0.293328 + 1.120327I$	$4.51202 - 5.11815I$	$8.89658 + 7.24819I$
$u = 0.566889 + 0.487295I$ $a = 1.27041 + 0.78556I$ $b = 0.293328 - 1.120327I$	$4.51202 + 5.11815I$	$8.89658 - 7.24819I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.663884 - 0.670936I$ $a = -1.15868 - 0.88811I$ $b = -0.33009 - 1.44308I$	$5.56188 - 5.09196I$	$7.87626 + 5.74174I$
$u = 0.663884 + 0.670936I$ $a = -1.15868 + 0.88811I$ $b = -0.33009 + 1.44308I$	$5.56188 + 5.09196I$	$7.87626 - 5.74174I$
$u = 0.912889 - 0.065447I$ $a = 0.654408 - 0.408442I$ $b = -0.109027 + 0.587707I$	$1.58471 - 0.10901I$	$7.61205 + 0.31750I$
$u = 0.912889 + 0.065447I$ $a = 0.654408 + 0.408442I$ $b = -0.109027 - 0.587707I$	$1.58471 + 0.10901I$	$7.61205 - 0.31750I$
$u = 1.31990$ $a = 0.0472574$ $b = -0.674808$	2.77979	-0.437701
$u = 1.55236 - 0.02522I$ $a = -0.133426 + 0.715380I$ $b = -0.19113 - 1.40151I$	$7.75920 - 2.91351I$	$7.55652 + 2.72251I$
$u = 1.55236 + 0.02522I$ $a = -0.133426 - 0.715380I$ $b = -0.19113 + 1.40151I$	$7.75920 + 2.91351I$	$7.55652 - 2.72251I$
$u = 1.56343 - 0.06205I$ $a = -1.285728 + 0.513846I$ $b = -0.270263 - 1.324284I$	$15.6947 - 3.0236I$	$16.1010 + 3.0701I$
$u = 1.56343 + 0.06205I$ $a = -1.285728 - 0.513846I$ $b = -0.270263 + 1.324284I$	$15.6947 + 3.0236I$	$16.1010 - 3.0701I$
$u = 1.59540 - 0.14328I$ $a = -0.915820 - 0.268097I$ $b = -0.698680 - 0.076811I$	$11.68026 - 0.45414I$	$9.94382 - 0.23365I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.59540 + 0.14328I$ $a = -0.915820 + 0.268097I$ $b = -0.698680 + 0.076811I$	$11.68026 + 0.45414I$	$9.94382 + 0.23365I$
$u = 1.60361 - 0.11834I$ $a = 0.911699 - 0.052547I$ $b = 1.42194 + 0.25243I$	$12.9698 - 7.5955I$	$10.73650 + 4.72646I$
$u = 1.60361 + 0.11834I$ $a = 0.911699 + 0.052547I$ $b = 1.42194 - 0.25243I$	$12.9698 + 7.5955I$	$10.73650 - 4.72646I$
$u = 1.60729 - 0.06441I$ $a = 0.887442 - 0.078089I$ $b = 0.81025 + 1.62623I$	$17.0188 - 0.6284I$	$13.76003 - 0.45669I$
$u = 1.60729 + 0.06441I$ $a = 0.887442 + 0.078089I$ $b = 0.81025 - 1.62623I$	$17.0188 + 0.6284I$	$13.76003 + 0.45669I$
$u = 1.68149 - 0.27693I$ $a = 1.006943 - 0.127051I$ $b = 0.53294 + 1.57371I$	$18.8364 - 14.4187I$	$11.67577 + 6.36175I$
$u = 1.68149 + 0.27693I$ $a = 1.006943 + 0.127051I$ $b = 0.53294 - 1.57371I$	$18.8364 + 14.4187I$	$11.67577 - 6.36175I$
$u = 1.78123 - 0.42255I$ $a = -0.759705 - 0.078407I$ $b = -0.27686 - 1.40310I$	$16.5334 - 4.0342I$	$14.4430 + 2.7231I$
$u = 1.78123 + 0.42255I$ $a = -0.759705 + 0.078407I$ $b = -0.27686 + 1.40310I$	$16.5334 + 4.0342I$	$14.4430 - 2.7231I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^{15} - 3u^{14} + \dots + 5u - 1)(u^{59} + 8u^{58} + \dots + 7075u + 1561)$
c_2	$(u^{15} + u^{14} + \dots - u - 1)(u^{59} + 2u^{58} + \dots - u + 1)$
c_3	$(u^{15} + 2u^{14} + \dots + 2u + 1)(u^{59} + 3u^{58} + \dots - 44u - 1)$
c_4, c_5	$(u^{15} - 2u^{14} + \dots - 2u - 1)(u^{59} + 3u^{58} + \dots - 68u + 47)$
c_6	$(u^{15} - u^{14} + \dots - u + 1)(u^{59} + 2u^{58} + \dots - u + 1)$
c_7	$(u^{15} - 3u^{14} + \dots + 3u + 1)(u^{59} - 30u^{57} + \dots + 331u + 19)$
c_8	$(u^{15} + 2u^{14} + \dots - 2u + 1)(u^{59} + 3u^{58} + \dots - 68u + 47)$
c_9	$(u^{15} - u^{14} + \dots - 7u - 1)(u^{59} + 2u^{58} + \dots + 2319u - 2117)$
c_{10}	$(u^{15} + 3u^{14} + \dots + 3u - 1)(u^{59} - 30u^{57} + \dots + 331u + 19)$
c_{11}	$(u^{15} - 2u^{14} + \dots + 2u - 1)(u^{59} + 3u^{58} + \dots - 44u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1	$(y^{15} - 5y^{14} + \dots + 13y - 1)$ $(y^{59} - 28y^{58} + \dots + 51101495y - 2436721)$
c_2, c_6	$(y^{15} + 11y^{14} + \dots - 23y - 1)(y^{59} + 48y^{58} + \dots + 143y - 1)$
c_3, c_{11}	$(y^{15} + 10y^{14} + \dots - 6y - 1)(y^{59} + 51y^{58} + \dots + 564y - 1)$
c_4, c_5, c_8	$(y^{15} - 18y^{14} + \dots + 18y - 1)(y^{59} - 69y^{58} + \dots + 52564y - 2209)$
c_7, c_{10}	$(y^{15} - 17y^{14} + \dots + 17y - 1)(y^{59} - 60y^{58} + \dots + 84595y - 361)$
c_9	$(y^{15} - 5y^{14} + \dots + 57y - 1)$ $(y^{59} - 32y^{58} + \dots + 164317887y - 4481689)$