

Pensieve header: Knot[12,Alternating,Last], just for the heck of it.

```
In[*]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\SL2Invariant"];
<< SL2Invariant.m
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\SL2Invariant\\k=2"];
```

Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.

Read more at <http://katlas.org/wiki/KnotTheory>.

This is Profile.m of <http://www.drorbn.net/AcademicPensieve/Projects/Profile/>.

This version: June 2018. Original version: July 1994.

```
In[*]:= AllKnots[12, Alternating] // Last
```

```
Out[*]:= Knot[12, Alternating, 1288]
```

```
In[*]:= $k = 2;
ħ = γ = 1;
$QZipFail = True;
K = Knot[12, Alternating, 1288];
{n, type, k} = List@@K;
fname = "Data/" <> ToString[n] <>
  (type /. {Alternating -> "a", NonAlternating -> "n"}) <> ToString[k] <> ".m";
Switch[FileType[fname],
  None, z = Echo@(K -> Timing[E4@Z@K]); Put[z, fname],
  File, z = Echo@Get[fname]
];
z
```

KnotTheory: Loading precomputed data in KnotTheory/12A.dts.

KnotTheory: The GaussCode to PD conversion was written by Siddarth Sankaran at the University of Toronto in the summer of 2005.

» Knot[12, Alternating, 1288] ->

$$\left\{ 1835.86, \mathbb{E}_{\{\} \rightarrow \{\emptyset\}} \left[\frac{-1 + 3T - 7T^2 + 14T^3 - 21T^4 + 25T^5 - 21T^6 + 14T^7 - 7T^8 + 3T^9 - T^{10}}{T^5}, \right. \right.$$

$$\left. \emptyset, \emptyset, \left\{ 1, \frac{1}{T^{20}} \left(-5 + 57T - 369T^2 + 1768T^3 - 6876T^4 + 22740T^5 - 65723T^6 + 168935T^7 - \right. \right. \right.$$

$$390741T^8 + 819698T^9 - 1567750T^{10} + 2742228T^{11} - 4392068T^{12} + 6436976T^{13} -$$

$$8607150T^{14} + 10435310T^{15} - 11337389T^{16} + 10784979T^{17} - 8519755T^{18} + 4716344T^{19} -$$

$$4716344T^{21} + 8519755T^{22} - 10784979T^{23} + 11337389T^{24} - 10435310T^{25} + 8607150T^{26} -$$

$$6436976T^{27} + 4392068T^{28} - 2742228T^{29} + 1567750T^{30} - 819698T^{31} + 390741T^{32} -$$

$$168935T^{33} + 65723T^{34} - 22740T^{35} + 6876T^{36} - 1768T^{37} + 369T^{38} - 57T^{39} + 5T^{40} \Big) +$$

$$\frac{1}{T^{20}} a \left(-10 + 114T - 738T^2 + 3536T^3 - 13752T^4 + 45480T^5 - 131446T^6 + 337870T^7 - 781482T^8 + \right.$$

$$1639396T^9 - 3135500T^{10} + 5484456T^{11} - 8784136T^{12} + 12873952T^{13} - 17214300T^{14} +$$

$$20870620T^{15} - 22674778T^{16} + 21569958T^{17} - 17039510T^{18} + 9432688T^{19} - 9432688T^{21} +$$

$$17039510T^{22} - 21569958T^{23} + 22674778T^{24} - 20870620T^{25} + 17214300T^{26} -$$

$$12873952T^{27} + 8784136T^{28} - 5484456T^{29} + 3135500T^{30} - 1639396T^{31} + 781482T^{32} -$$

$$337870T^{33} + 131446T^{34} - 45480T^{35} + 13752T^{36} - 3536T^{37} + 738T^{38} - 114T^{39} + 10T^{40} \Big) +$$

$$\begin{aligned}
 & \frac{1}{T^{20}} \left(-10 + 104 T - 634 T^2 + 2902 T^3 - 10850 T^4 + 34630 T^5 - 96816 T^6 + 241054 T^7 - 540428 T^8 + \right. \\
 & \quad 1098968 T^9 - 2036532 T^{10} + 3447924 T^{11} - 5336212 T^{12} + 7537740 T^{13} - 9676560 T^{14} + \\
 & \quad 11194060 T^{15} - 11480718 T^{16} + 10089240 T^{17} - 6950270 T^{18} + 2482418 T^{19} + \\
 & \quad 2482418 T^{20} - 6950270 T^{21} + 10089240 T^{22} - 11480718 T^{23} + 11194060 T^{24} - 9676560 T^{25} + \\
 & \quad 7537740 T^{26} - 5336212 T^{27} + 3447924 T^{28} - 2036532 T^{29} + 1098968 T^{30} - 540428 T^{31} + \\
 & \quad \left. 241054 T^{32} - 96816 T^{33} + 34630 T^{34} - 10850 T^{35} + 2902 T^{36} - 634 T^{37} + 104 T^{38} - 10 T^{39} \right) \times y, \\
 & \frac{1}{2 T^{40}} \left(25 - 567 T + 6853 T^2 - 58468 T^3 + 393401 T^4 - 2212695 T^5 + 10777252 T^6 - 46530355 T^7 + \right. \\
 & \quad 181015224 T^8 - 642139431 T^9 + 2095867320 T^{10} - 6336867879 T^{11} + 17841028957 T^{12} - \\
 & \quad 46957248616 T^{13} + 115865908741 T^{14} - 268521955099 T^{15} + 584975631811 T^{16} - \\
 & \quad 1197549677858 T^{17} + 2299680064770 T^{18} - 4126076698092 T^{19} + 6864574847662 T^{20} - \\
 & \quad 10437911417278 T^{21} + 14075124192268 T^{22} - 15591387953098 T^{23} + 10331294734220 T^{24} + \\
 & \quad 10177163124042 T^{25} - 59654905389016 T^{26} + 158186396528594 T^{27} - 332421421954438 T^{28} + \\
 & \quad 614178017610968 T^{29} - 1036874896508254 T^{30} + 1629617036999842 T^{31} - 2409427643759115 T^{32} + \\
 & \quad 3372933517661299 T^{33} - 4489517214431633 T^{34} + 5698237012122836 T^{35} - \\
 & \quad 6910430561973157 T^{36} + 8018794700429891 T^{37} - 8912080261554900 T^{38} + \\
 & \quad 9492820590455743 T^{39} - 9694307482143540 T^{40} + 9492820590455743 T^{41} - \\
 & \quad 8912080261554900 T^{42} + 8018794700429891 T^{43} - 6910430561973157 T^{44} + \\
 & \quad 5698237012122836 T^{45} - 4489517214431633 T^{46} + 3372933517661299 T^{47} - \\
 & \quad 2409427643759115 T^{48} + 1629617036999842 T^{49} - 1036874896508254 T^{50} + 614178017610968 T^{51} - \\
 & \quad 332421421954438 T^{52} + 158186396528594 T^{53} - 59654905389016 T^{54} + 10177163124042 T^{55} + \\
 & \quad 10331294734220 T^{56} - 15591387953098 T^{57} + 14075124192268 T^{58} - 10437911417278 T^{59} + \\
 & \quad 6864574847662 T^{60} - 4126076698092 T^{61} + 2299680064770 T^{62} - 1197549677858 T^{63} + \\
 & \quad 584975631811 T^{64} - 268521955099 T^{65} + 115865908741 T^{66} - 46957248616 T^{67} + \\
 & \quad 17841028957 T^{68} - 6336867879 T^{69} + 2095867320 T^{70} - 642139431 T^{71} + 181015224 T^{72} - \\
 & \quad 46530355 T^{73} + 10777252 T^{74} - 2212695 T^{75} + 393401 T^{76} - 58468 T^{77} + 6853 T^{78} - 567 T^{79} + 25 T^{80} \Big) + \\
 & \frac{1}{T^{40}} a \left(50 - 1134 T + 13714 T^2 - 117128 T^3 + 789210 T^4 - 4446414 T^5 + 21697740 T^6 - 93869478 T^7 + \right. \\
 & \quad 365955980 T^8 - 1301056526 T^9 + 4255941348 T^{10} - 12896395182 T^{11} + 36387847154 T^{12} - \\
 & \quad 95972113872 T^{13} + 237271686594 T^{14} - 550848961910 T^{15} + 1201795696998 T^{16} - \\
 & \quad 2462921152260 T^{17} + 4731829793716 T^{18} - 8486027006040 T^{19} + 14090556328716 T^{20} - \\
 & \quad 21324213809980 T^{21} + 28448972735184 T^{22} - 30643319938388 T^{23} + 17696443600384 T^{24} + \\
 & \quad 28940802045012 T^{25} - 139312255311112 T^{26} + 357440867622820 T^{27} - 741834086122764 T^{28} + \\
 & \quad 1362490210937072 T^{29} - 2293121916427324 T^{30} + 3598172343864900 T^{31} - \\
 & \quad 5315674781842870 T^{32} + 7438818001731558 T^{33} - 9900669083674266 T^{34} + \\
 & \quad 12567177047947560 T^{35} - 15242756443293026 T^{36} + 17690270075478630 T^{37} - \\
 & \quad 19663547632542812 T^{38} + 20946725321526014 T^{39} - 21391977550315716 T^{40} + \\
 & \quad 20946725321526014 T^{41} - 19663547632542812 T^{42} + 17690270075478630 T^{43} - \\
 & \quad 15242756443293026 T^{44} + 12567177047947560 T^{45} - 9900669083674266 T^{46} + \\
 & \quad 7438818001731558 T^{47} - 5315674781842870 T^{48} + 3598172343864900 T^{49} - \\
 & \quad 2293121916427324 T^{50} + 1362490210937072 T^{51} - 741834086122764 T^{52} + \\
 & \quad 357440867622820 T^{53} - 139312255311112 T^{54} + 28940802045012 T^{55} + 17696443600384 T^{56} - \\
 & \quad 30643319938388 T^{57} + 28448972735184 T^{58} - 21324213809980 T^{59} + 14090556328716 T^{60} - \\
 & \quad 8486027006040 T^{61} + 4731829793716 T^{62} - 2462921152260 T^{63} + 1201795696998 T^{64} - \\
 & \quad 550848961910 T^{65} + 237271686594 T^{66} - 95972113872 T^{67} + 36387847154 T^{68} - \\
 & \quad 12896395182 T^{69} + 4255941348 T^{70} - 1301056526 T^{71} + 365955980 T^{72} - 93869478 T^{73} + \\
 & \quad 21697740 T^{74} - 4446414 T^{75} + 789210 T^{76} - 117128 T^{77} + 13714 T^{78} - 1134 T^{79} + 50 T^{80} \Big) + \\
 & \frac{1}{T^{40}} a^2 \left(50 - 1134 T + 13714 T^2 - 117128 T^3 + 789210 T^4 - 4446414 T^5 + 21697740 T^6 - 93869478 T^7 + \right. \\
 & \quad 365955980 T^8 - 1301056526 T^9 + 4255941348 T^{10} - 12896395182 T^{11} + 36387847154 T^{12} -
 \end{aligned}$$

$$\begin{aligned}
 & 95\,972\,113\,872\,T^{13} + 237\,271\,686\,594\,T^{14} - 550\,848\,961\,910\,T^{15} + 1\,201\,795\,696\,998\,T^{16} - \\
 & 2\,462\,921\,152\,260\,T^{17} + 4\,731\,829\,793\,716\,T^{18} - 8\,486\,027\,006\,040\,T^{19} + 14\,090\,556\,328\,716\,T^{20} - \\
 & 21\,324\,213\,809\,980\,T^{21} + 28\,448\,972\,735\,184\,T^{22} - 30\,643\,319\,938\,388\,T^{23} + 17\,696\,443\,600\,384\,T^{24} + \\
 & 28\,940\,802\,045\,012\,T^{25} - 139\,312\,255\,311\,112\,T^{26} + 357\,440\,867\,622\,820\,T^{27} - 741\,834\,086\,122\,764\,T^{28} + \\
 & 1\,362\,490\,210\,937\,072\,T^{29} - 2\,293\,121\,916\,427\,324\,T^{30} + 3\,598\,172\,343\,864\,900\,T^{31} - \\
 & 5\,315\,674\,781\,842\,870\,T^{32} + 7\,438\,818\,001\,731\,558\,T^{33} - 9\,900\,669\,083\,674\,266\,T^{34} + \\
 & 12\,567\,177\,047\,947\,560\,T^{35} - 15\,242\,756\,443\,293\,026\,T^{36} + 17\,690\,270\,075\,478\,630\,T^{37} - \\
 & 19\,663\,547\,632\,542\,812\,T^{38} + 20\,946\,725\,321\,526\,014\,T^{39} - 21\,391\,977\,550\,315\,716\,T^{40} + \\
 & 20\,946\,725\,321\,526\,014\,T^{41} - 19\,663\,547\,632\,542\,812\,T^{42} + 17\,690\,270\,075\,478\,630\,T^{43} - \\
 & 15\,242\,756\,443\,293\,026\,T^{44} + 12\,567\,177\,047\,947\,560\,T^{45} - 9\,900\,669\,083\,674\,266\,T^{46} + \\
 & 7\,438\,818\,001\,731\,558\,T^{47} - 5\,315\,674\,781\,842\,870\,T^{48} + 3\,598\,172\,343\,864\,900\,T^{49} - \\
 & 2\,293\,121\,916\,427\,324\,T^{50} + 1\,362\,490\,210\,937\,072\,T^{51} - 741\,834\,086\,122\,764\,T^{52} + \\
 & 357\,440\,867\,622\,820\,T^{53} - 139\,312\,255\,311\,112\,T^{54} + 28\,940\,802\,045\,012\,T^{55} + 17\,696\,443\,600\,384\,T^{56} - \\
 & 30\,643\,319\,938\,388\,T^{57} + 28\,448\,972\,735\,184\,T^{58} - 21\,324\,213\,809\,980\,T^{59} + 14\,090\,556\,328\,716\,T^{60} - \\
 & 8\,486\,027\,006\,040\,T^{61} + 4\,731\,829\,793\,716\,T^{62} - 2\,462\,921\,152\,260\,T^{63} + 1\,201\,795\,696\,998\,T^{64} - \\
 & 550\,848\,961\,910\,T^{65} + 237\,271\,686\,594\,T^{66} - 95\,972\,113\,872\,T^{67} + 36\,387\,847\,154\,T^{68} - \\
 & 12\,896\,395\,182\,T^{69} + 4\,255\,941\,348\,T^{70} - 1\,301\,056\,526\,T^{71} + 365\,955\,980\,T^{72} - 93\,869\,478\,T^{73} + \\
 & 21\,697\,740\,T^{74} - 4\,446\,414\,T^{75} + 789\,210\,T^{76} - 117\,128\,T^{77} + 13\,714\,T^{78} - 1134\,T^{79} + 50\,T^{80}) +
 \end{aligned}$$

$$\frac{1}{T^{40}} a (100 - 2148 T + 24\,832 T^2 - 204\,020 T^3 + 1\,328\,004 T^4 - 7\,248\,592 T^5 + 34\,334\,980 T^6 -$$

$$\begin{aligned}
 & 144\,368\,796\,T^7 + 547\,419\,300\,T^8 - 1\,893\,412\,576\,T^9 + 6\,024\,620\,436\,T^{10} - 17\,746\,819\,772\,T^{11} + \\
 & 48\,623\,055\,648\,T^{12} - 124\,312\,808\,988\,T^{13} + 297\,172\,490\,964\,T^{14} - 664\,684\,526\,728\,T^{15} + \\
 & 1\,389\,807\,634\,296\,T^{16} - 2\,708\,428\,298\,888\,T^{17} + 4\,887\,987\,422\,896\,T^{18} - 8\,067\,388\,214\,328\,T^{19} + \\
 & 11\,863\,303\,353\,032\,T^{20} - 14\,583\,160\,602\,160\,T^{21} + 11\,865\,346\,486\,776\,T^{22} + 5\,388\,232\,042\,536\,T^{23} - \\
 & 53\,767\,750\,585\,816\,T^{24} + 160\,484\,370\,318\,048\,T^{25} - 366\,134\,715\,679\,576\,T^{26} + 725\,902\,586\,091\,816\,T^{27} - \\
 & 1\,307\,679\,730\,234\,272\,T^{28} + 2\,185\,647\,844\,579\,336\,T^{29} - 3\,428\,523\,507\,647\,352\,T^{30} + \\
 & 5\,083\,002\,915\,335\,568\,T^{31} - 7\,154\,768\,970\,968\,180\,T^{32} + 9\,591\,246\,207\,031\,412\,T^{33} - \\
 & 12\,271\,395\,252\,102\,144\,T^{34} + 15\,007\,530\,266\,256\,964\,T^{35} - 17\,562\,060\,399\,410\,900\,T^{36} + \\
 & 19\,678\,450\,137\,280\,464\,T^{37} - 21\,121\,488\,770\,721\,428\,T^{38} + 21\,718\,524\,438\,436\,428\,T^{39} - \\
 & 21\,391\,977\,550\,315\,716\,T^{40} + 20\,174\,926\,204\,615\,600\,T^{41} - 18\,205\,606\,494\,364\,196\,T^{42} + \\
 & 15\,702\,090\,013\,676\,796\,T^{43} - 12\,923\,452\,487\,175\,152\,T^{44} + 10\,126\,823\,829\,638\,156\,T^{45} - \\
 & 7\,529\,942\,915\,246\,388\,T^{46} + 5\,286\,389\,796\,431\,704\,T^{47} - 3\,476\,580\,592\,717\,560\,T^{48} + \\
 & 2\,113\,341\,772\,394\,232\,T^{49} - 1\,157\,720\,325\,207\,296\,T^{50} + 539\,332\,577\,294\,808\,T^{51} - \\
 & 175\,988\,442\,011\,256\,T^{52} - 11\,020\,850\,846\,176\,T^{53} + 87\,510\,205\,057\,352\,T^{54} - 102\,602\,766\,228\,024\,T^{55} + \\
 & 89\,160\,637\,786\,584\,T^{56} - 66\,674\,871\,919\,312\,T^{57} + 45\,032\,598\,983\,592\,T^{58} - 28\,065\,267\,017\,800\,T^{59} + \\
 & 16\,317\,809\,304\,400\,T^{60} - 8\,904\,665\,797\,752\,T^{61} + 4\,575\,672\,164\,536\,T^{62} - 2\,217\,414\,005\,632\,T^{63} + \\
 & 1\,013\,783\,759\,700\,T^{64} - 437\,013\,397\,092\,T^{65} + 177\,370\,882\,224\,T^{66} - 67\,631\,418\,756\,T^{67} + \\
 & 24\,152\,638\,660\,T^{68} - 8\,045\,970\,592\,T^{69} + 2\,487\,262\,260\,T^{70} - 708\,700\,476\,T^{71} + 184\,492\,660\,T^{72} - \\
 & 43\,370\,160\,T^{73} + 9\,060\,500\,T^{74} - 1\,644\,236\,T^{75} + 250\,416\,T^{76} - 30\,236\,T^{77} + 2596\,T^{78} - 120\,T^{79}) x y +
 \end{aligned}$$

$$\frac{1}{T^{40}} (55 - 1131 T + 12\,636 T^2 - 100\,973 T^3 + 642\,087 T^4 - 3\,435\,186 T^5 + 15\,991\,099 T^6 - 66\,224\,265 T^7 +$$

$$\begin{aligned}
 & 247\,805\,679\,T^8 - 847\,363\,030\,T^9 + 2\,670\,284\,727\,T^{10} - 7\,804\,579\,881\,T^{11} + 21\,259\,038\,720\,T^{12} - \\
 & 54\,161\,884\,083\,T^{13} + 129\,384\,587\,931\,T^{14} - 290\,232\,483\,676\,T^{15} + 611\,572\,926\,306\,T^{16} - \\
 & 1\,209\,452\,189\,550\,T^{17} + 2\,238\,711\,115\,612\,T^{18} - 3\,857\,588\,264\,070\,T^{19} + 6\,124\,554\,328\,638\,T^{20} - \\
 & 8\,779\,385\,567\,800\,T^{21} + 10\,855\,669\,033\,722\,T^{22} - 10\,087\,432\,402\,290\,T^{23} + 2\,121\,321\,508\,262\,T^{24} + \\
 & 20\,364\,862\,823\,436\,T^{25} - 68\,413\,603\,384\,914\,T^{26} + 157\,059\,153\,640\,854\,T^{27} - 304\,693\,923\,241\,416\,T^{28} + \\
 & 531\,148\,119\,205\,242\,T^{29} - 854\,318\,200\,805\,154\,T^{30} + 1\,285\,577\,676\,208\,128\,T^{31} - \\
 & 1\,824\,712\,015\,641\,843\,T^{32} + 2\,455\,585\,264\,927\,607\,T^{33} - 3\,143\,969\,505\,507\,468\,T^{34} + \\
 & 3\,838\,776\,182\,850\,561\,T^{35} - 4\,477\,261\,420\,421\,363\,T^{36} + 4\,993\,752\,737\,489\,802\,T^{37} - \\
 & 5\,330\,351\,006\,344\,455\,T^{38} + 5\,447\,274\,490\,843\,581\,T^{39} - 5\,330\,351\,006\,344\,455\,T^{40} + \\
 & 4\,993\,752\,737\,489\,802\,T^{41} - 4\,477\,261\,420\,421\,363\,T^{42} + 3\,838\,776\,182\,850\,561\,T^{43} -
 \end{aligned}$$

$$\begin{aligned}
 & 3\,143\,969\,505\,507\,468\,T^{44} + 2\,455\,585\,264\,927\,607\,T^{45} - 1\,824\,712\,015\,641\,843\,T^{46} + \\
 & 1\,285\,577\,676\,208\,128\,T^{47} - 854\,318\,200\,805\,154\,T^{48} + 531\,148\,119\,205\,242\,T^{49} - 304\,693\,923\,241\,416\,T^{50} + \\
 & 157\,059\,153\,640\,854\,T^{51} - 68\,413\,603\,384\,914\,T^{52} + 20\,364\,862\,823\,436\,T^{53} + 2\,121\,321\,508\,262\,T^{54} - \\
 & 10\,087\,432\,402\,290\,T^{55} + 10\,855\,669\,033\,722\,T^{56} - 8\,779\,385\,567\,800\,T^{57} + 6\,124\,554\,328\,638\,T^{58} - \\
 & 3\,857\,588\,264\,070\,T^{59} + 2\,238\,711\,115\,612\,T^{60} - 1\,209\,452\,189\,550\,T^{61} + 611\,572\,926\,306\,T^{62} - \\
 & 290\,232\,483\,676\,T^{63} + 129\,384\,587\,931\,T^{64} - 54\,161\,884\,083\,T^{65} + 21\,259\,038\,720\,T^{66} - \\
 & 7\,804\,579\,881\,T^{67} + 2\,670\,284\,727\,T^{68} - 847\,363\,030\,T^{69} + 247\,805\,679\,T^{70} - 66\,224\,265\,T^{71} + \\
 & 15\,991\,099\,T^{72} - 3\,435\,186\,T^{73} + 642\,087\,T^{74} - 100\,973\,T^{75} + 12\,636\,T^{76} - 1131\,T^{77} + 55\,T^{78} \} x^2 y^2 \}
 \end{aligned}$$

Out[*]= Knot [12, Alternating, 1288] →

$$\left\{ 1835.86, \mathbb{E}_{\{\} \rightarrow \{\emptyset\}} \left[\frac{-1 + 3T - 7T^2 + 14T^3 - 21T^4 + 25T^5 - 21T^6 + 14T^7 - 7T^8 + 3T^9 - T^{10}}{T^5}, \emptyset, \emptyset, \right. \right.$$

$$\left. \left\{ 1, \frac{1}{T^{20}} \left(-5 + 57T - 369T^2 + 1768T^3 - 6876T^4 + 22\,740T^5 - 65\,723T^6 + 168\,935T^7 - 390\,741T^8 + \right. \right. \right.$$

$$\left. \left. \left. \begin{aligned}
 & 819\,698T^9 - 1\,567\,750T^{10} + 2\,742\,228T^{11} - 4\,392\,068T^{12} + 6\,436\,976T^{13} - 8\,607\,150T^{14} + \\
 & 10\,435\,310T^{15} - 11\,337\,389T^{16} + 10\,784\,979T^{17} - 8\,519\,755T^{18} + 4\,716\,344T^{19} - 4\,716\,344T^{21} + \\
 & 8\,519\,755T^{22} - 10\,784\,979T^{23} + 11\,337\,389T^{24} - 10\,435\,310T^{25} + 8\,607\,150T^{26} - \\
 & 6\,436\,976T^{27} + 4\,392\,068T^{28} - 2\,742\,228T^{29} + 1\,567\,750T^{30} - 819\,698T^{31} + 390\,741T^{32} - \\
 & 168\,935T^{33} + 65\,723T^{34} - 22\,740T^{35} + 6876T^{36} - 1768T^{37} + 369T^{38} - 57T^{39} + 5T^{40} \right) +
 \end{aligned} \right. \right.$$

$$\left. \frac{1}{T^{20}} a \left(-10 + 114T - 738T^2 + 3536T^3 - 13\,752T^4 + 45\,480T^5 - 131\,446T^6 + 337\,870T^7 - \right. \right.$$

$$\left. \left. \begin{aligned}
 & 781\,482T^8 + 1\,639\,396T^9 - 3\,135\,500T^{10} + 5\,484\,456T^{11} - 8\,784\,136T^{12} + 12\,873\,952T^{13} - \\
 & 17\,214\,300T^{14} + 20\,870\,620T^{15} - 22\,674\,778T^{16} + 21\,569\,958T^{17} - 17\,039\,510T^{18} + 9\,432\,688T^{19} - \\
 & 9\,432\,688T^{21} + 17\,039\,510T^{22} - 21\,569\,958T^{23} + 22\,674\,778T^{24} - 20\,870\,620T^{25} + 17\,214\,300T^{26} - \\
 & 12\,873\,952T^{27} + 8\,784\,136T^{28} - 5\,484\,456T^{29} + 3\,135\,500T^{30} - 1\,639\,396T^{31} + 781\,482T^{32} - \\
 & 337\,870T^{33} + 131\,446T^{34} - 45\,480T^{35} + 13\,752T^{36} - 3536T^{37} + 738T^{38} - 114T^{39} + 10T^{40} \right) +
 \end{aligned} \right.$$

$$\left. \frac{1}{T^{20}} \left(-10 + 104T - 634T^2 + 2902T^3 - 10\,850T^4 + 34\,630T^5 - 96\,816T^6 + 241\,054T^7 - \right. \right.$$

$$\left. \left. \begin{aligned}
 & 540\,428T^8 + 1\,098\,968T^9 - 2\,036\,532T^{10} + 3\,447\,924T^{11} - 5\,336\,212T^{12} + 7\,537\,740T^{13} - \\
 & 9\,676\,560T^{14} + 11\,194\,060T^{15} - 11\,480\,718T^{16} + 10\,089\,240T^{17} - 6\,950\,270T^{18} + 2\,482\,418T^{19} + \\
 & 2\,482\,418T^{20} - 6\,950\,270T^{21} + 10\,089\,240T^{22} - 11\,480\,718T^{23} + 11\,194\,060T^{24} - 9\,676\,560T^{25} + \\
 & 7\,537\,740T^{26} - 5\,336\,212T^{27} + 3\,447\,924T^{28} - 2\,036\,532T^{29} + 1\,098\,968T^{30} - 540\,428T^{31} + \\
 & 241\,054T^{32} - 96\,816T^{33} + 34\,630T^{34} - 10\,850T^{35} + 2902T^{36} - 634T^{37} + 104T^{38} - 10T^{39} \right) \times y,
 \end{aligned} \right.$$

$$\left. \frac{1}{2\,T^{40}} \left(25 - 567T + 6853T^2 - 58\,468T^3 + 393\,401T^4 - 2\,212\,695T^5 + 10\,777\,252T^6 - \right. \right.$$

$$\left. \left. \begin{aligned}
 & 46\,530\,355T^7 + 181\,015\,224T^8 - 642\,139\,431T^9 + 2\,095\,867\,320T^{10} - 6\,336\,867\,879T^{11} + \\
 & 17\,841\,028\,957T^{12} - 46\,957\,248\,616T^{13} + 115\,865\,908\,741T^{14} - 268\,521\,955\,099T^{15} + \\
 & 584\,975\,631\,811T^{16} - 1\,197\,549\,677\,858T^{17} + 2\,299\,680\,064\,770T^{18} - 4\,126\,076\,698\,092T^{19} + \\
 & 6\,864\,574\,847\,662T^{20} - 10\,437\,911\,417\,278T^{21} + 14\,075\,124\,192\,268T^{22} - 15\,591\,387\,953\,098T^{23} + \\
 & 10\,331\,294\,734\,220T^{24} + 10\,177\,163\,124\,042T^{25} - 59\,654\,905\,389\,016T^{26} + \\
 & 158\,186\,396\,528\,594T^{27} - 332\,421\,421\,954\,438T^{28} + 614\,178\,017\,610\,968T^{29} - \\
 & 1\,036\,874\,896\,508\,254T^{30} + 1\,629\,617\,036\,999\,842T^{31} - 2\,409\,427\,643\,759\,115T^{32} + \\
 & 3\,372\,933\,517\,661\,299T^{33} - 4\,489\,517\,214\,431\,633T^{34} + 5\,698\,237\,012\,122\,836T^{35} - \\
 & 6\,910\,430\,561\,973\,157T^{36} + 8\,018\,794\,700\,429\,891T^{37} - 8\,912\,080\,261\,554\,900T^{38} + \\
 & 9\,492\,820\,590\,455\,743T^{39} - 9\,694\,307\,482\,143\,540T^{40} + 9\,492\,820\,590\,455\,743T^{41} - \\
 & 8\,912\,080\,261\,554\,900T^{42} + 8\,018\,794\,700\,429\,891T^{43} - 6\,910\,430\,561\,973\,157T^{44} + \\
 & 5\,698\,237\,012\,122\,836T^{45} - 4\,489\,517\,214\,431\,633T^{46} + 3\,372\,933\,517\,661\,299T^{47} - \\
 & 2\,409\,427\,643\,759\,115T^{48} + 1\,629\,617\,036\,999\,842T^{49} - 1\,036\,874\,896\,508\,254T^{50} + \\
 & 614\,178\,017\,610\,968T^{51} - 332\,421\,421\,954\,438T^{52} + 158\,186\,396\,528\,594T^{53} - \\
 & 59\,654\,905\,389\,016T^{54} + 10\,177\,163\,124\,042T^{55} + 10\,331\,294\,734\,220T^{56} -
 \end{aligned} \right.$$

$$\begin{aligned}
& 15\,591\,387\,953\,098\,T^{57} + 14\,075\,124\,192\,268\,T^{58} - 10\,437\,911\,417\,278\,T^{59} + 6\,864\,574\,847\,662\,T^{60} - \\
& 4\,126\,076\,698\,092\,T^{61} + 2\,299\,680\,064\,770\,T^{62} - 1\,197\,549\,677\,858\,T^{63} + 584\,975\,631\,811\,T^{64} - \\
& 268\,521\,955\,099\,T^{65} + 115\,865\,908\,741\,T^{66} - 46\,957\,248\,616\,T^{67} + 17\,841\,028\,957\,T^{68} - \\
& 6\,336\,867\,879\,T^{69} + 2\,095\,867\,320\,T^{70} - 642\,139\,431\,T^{71} + 181\,015\,224\,T^{72} - 46\,530\,355\,T^{73} + \\
& 10\,777\,252\,T^{74} - 2\,212\,695\,T^{75} + 393\,401\,T^{76} - 58\,468\,T^{77} + 6\,853\,T^{78} - 567\,T^{79} + 25\,T^{80} \Big) + \\
& \frac{1}{T^{40}} a \left(50 - 1134\,T + 13\,714\,T^2 - 117\,128\,T^3 + 789\,210\,T^4 - 4\,446\,414\,T^5 + 21\,697\,740\,T^6 - \right. \\
& 93\,869\,478\,T^7 + 365\,955\,980\,T^8 - 1\,301\,056\,526\,T^9 + 4\,255\,941\,348\,T^{10} - 12\,896\,395\,182\,T^{11} + \\
& 36\,387\,847\,154\,T^{12} - 95\,972\,113\,872\,T^{13} + 237\,271\,686\,594\,T^{14} - 550\,848\,961\,910\,T^{15} + \\
& 1\,201\,795\,696\,998\,T^{16} - 2\,462\,921\,152\,260\,T^{17} + 4\,731\,829\,793\,716\,T^{18} - 8\,486\,027\,006\,040\,T^{19} + \\
& 14\,090\,556\,328\,716\,T^{20} - 21\,324\,213\,809\,980\,T^{21} + 28\,448\,972\,735\,184\,T^{22} - 30\,643\,319\,938\,388\,T^{23} + \\
& 17\,696\,443\,600\,384\,T^{24} + 28\,940\,802\,045\,012\,T^{25} - 139\,312\,255\,311\,112\,T^{26} + \\
& 357\,440\,867\,622\,820\,T^{27} - 741\,834\,086\,122\,764\,T^{28} + 1\,362\,490\,210\,937\,072\,T^{29} - \\
& 2\,293\,121\,916\,427\,324\,T^{30} + 3\,598\,172\,343\,864\,900\,T^{31} - 5\,315\,674\,781\,842\,870\,T^{32} + \\
& 7\,438\,818\,001\,731\,558\,T^{33} - 9\,900\,669\,083\,674\,266\,T^{34} + 12\,567\,177\,047\,947\,560\,T^{35} - \\
& 15\,242\,756\,443\,293\,026\,T^{36} + 17\,690\,270\,075\,478\,630\,T^{37} - 19\,663\,547\,632\,542\,812\,T^{38} + \\
& 20\,946\,725\,321\,526\,014\,T^{39} - 21\,391\,977\,550\,315\,716\,T^{40} + 20\,946\,725\,321\,526\,014\,T^{41} - \\
& 19\,663\,547\,632\,542\,812\,T^{42} + 17\,690\,270\,075\,478\,630\,T^{43} - 15\,242\,756\,443\,293\,026\,T^{44} + \\
& 12\,567\,177\,047\,947\,560\,T^{45} - 9\,900\,669\,083\,674\,266\,T^{46} + 7\,438\,818\,001\,731\,558\,T^{47} - \\
& 5\,315\,674\,781\,842\,870\,T^{48} + 3\,598\,172\,343\,864\,900\,T^{49} - 2\,293\,121\,916\,427\,324\,T^{50} + \\
& 1\,362\,490\,210\,937\,072\,T^{51} - 741\,834\,086\,122\,764\,T^{52} + 357\,440\,867\,622\,820\,T^{53} - \\
& 139\,312\,255\,311\,112\,T^{54} + 28\,940\,802\,045\,012\,T^{55} + 17\,696\,443\,600\,384\,T^{56} - \\
& 30\,643\,319\,938\,388\,T^{57} + 28\,448\,972\,735\,184\,T^{58} - 21\,324\,213\,809\,980\,T^{59} + 14\,090\,556\,328\,716\,T^{60} - \\
& 8\,486\,027\,006\,040\,T^{61} + 4\,731\,829\,793\,716\,T^{62} - 2\,462\,921\,152\,260\,T^{63} + 1\,201\,795\,696\,998\,T^{64} - \\
& 550\,848\,961\,910\,T^{65} + 237\,271\,686\,594\,T^{66} - 95\,972\,113\,872\,T^{67} + 36\,387\,847\,154\,T^{68} - \\
& 12\,896\,395\,182\,T^{69} + 4\,255\,941\,348\,T^{70} - 1\,301\,056\,526\,T^{71} + 365\,955\,980\,T^{72} - 93\,869\,478\,T^{73} + \\
& 21\,697\,740\,T^{74} - 4\,446\,414\,T^{75} + 789\,210\,T^{76} - 117\,128\,T^{77} + 13\,714\,T^{78} - 1134\,T^{79} + 50\,T^{80} \Big) + \\
& \frac{1}{T^{40}} a^2 \left(50 - 1134\,T + 13\,714\,T^2 - 117\,128\,T^3 + 789\,210\,T^4 - 4\,446\,414\,T^5 + 21\,697\,740\,T^6 - \right. \\
& 93\,869\,478\,T^7 + 365\,955\,980\,T^8 - 1\,301\,056\,526\,T^9 + 4\,255\,941\,348\,T^{10} - 12\,896\,395\,182\,T^{11} + \\
& 36\,387\,847\,154\,T^{12} - 95\,972\,113\,872\,T^{13} + 237\,271\,686\,594\,T^{14} - 550\,848\,961\,910\,T^{15} + \\
& 1\,201\,795\,696\,998\,T^{16} - 2\,462\,921\,152\,260\,T^{17} + 4\,731\,829\,793\,716\,T^{18} - 8\,486\,027\,006\,040\,T^{19} + \\
& 14\,090\,556\,328\,716\,T^{20} - 21\,324\,213\,809\,980\,T^{21} + 28\,448\,972\,735\,184\,T^{22} - 30\,643\,319\,938\,388\,T^{23} + \\
& 17\,696\,443\,600\,384\,T^{24} + 28\,940\,802\,045\,012\,T^{25} - 139\,312\,255\,311\,112\,T^{26} + \\
& 357\,440\,867\,622\,820\,T^{27} - 741\,834\,086\,122\,764\,T^{28} + 1\,362\,490\,210\,937\,072\,T^{29} - \\
& 2\,293\,121\,916\,427\,324\,T^{30} + 3\,598\,172\,343\,864\,900\,T^{31} - 5\,315\,674\,781\,842\,870\,T^{32} + \\
& 7\,438\,818\,001\,731\,558\,T^{33} - 9\,900\,669\,083\,674\,266\,T^{34} + 12\,567\,177\,047\,947\,560\,T^{35} - \\
& 15\,242\,756\,443\,293\,026\,T^{36} + 17\,690\,270\,075\,478\,630\,T^{37} - 19\,663\,547\,632\,542\,812\,T^{38} + \\
& 20\,946\,725\,321\,526\,014\,T^{39} - 21\,391\,977\,550\,315\,716\,T^{40} + 20\,946\,725\,321\,526\,014\,T^{41} - \\
& 19\,663\,547\,632\,542\,812\,T^{42} + 17\,690\,270\,075\,478\,630\,T^{43} - 15\,242\,756\,443\,293\,026\,T^{44} + \\
& 12\,567\,177\,047\,947\,560\,T^{45} - 9\,900\,669\,083\,674\,266\,T^{46} + 7\,438\,818\,001\,731\,558\,T^{47} - \\
& 5\,315\,674\,781\,842\,870\,T^{48} + 3\,598\,172\,343\,864\,900\,T^{49} - 2\,293\,121\,916\,427\,324\,T^{50} + \\
& 1\,362\,490\,210\,937\,072\,T^{51} - 741\,834\,086\,122\,764\,T^{52} + 357\,440\,867\,622\,820\,T^{53} - \\
& 139\,312\,255\,311\,112\,T^{54} + 28\,940\,802\,045\,012\,T^{55} + 17\,696\,443\,600\,384\,T^{56} - \\
& 30\,643\,319\,938\,388\,T^{57} + 28\,448\,972\,735\,184\,T^{58} - 21\,324\,213\,809\,980\,T^{59} + 14\,090\,556\,328\,716\,T^{60} - \\
& 8\,486\,027\,006\,040\,T^{61} + 4\,731\,829\,793\,716\,T^{62} - 2\,462\,921\,152\,260\,T^{63} + 1\,201\,795\,696\,998\,T^{64} - \\
& 550\,848\,961\,910\,T^{65} + 237\,271\,686\,594\,T^{66} - 95\,972\,113\,872\,T^{67} + 36\,387\,847\,154\,T^{68} - \\
& 12\,896\,395\,182\,T^{69} + 4\,255\,941\,348\,T^{70} - 1\,301\,056\,526\,T^{71} + 365\,955\,980\,T^{72} - 93\,869\,478\,T^{73} + \\
& 21\,697\,740\,T^{74} - 4\,446\,414\,T^{75} + 789\,210\,T^{76} - 117\,128\,T^{77} + 13\,714\,T^{78} - 1134\,T^{79} + 50\,T^{80} \Big) +
\end{aligned}$$

$$\begin{aligned}
 & \frac{1}{T^{40}} a \left(100 - 2148 T + 24\,832 T^2 - 204\,020 T^3 + 1\,328\,004 T^4 - 7\,248\,592 T^5 + 34\,334\,980 T^6 - \right. \\
 & 144\,368\,796 T^7 + 547\,419\,300 T^8 - 1\,893\,412\,576 T^9 + 6\,024\,620\,436 T^{10} - 17\,746\,819\,772 T^{11} + \\
 & 48\,623\,055\,648 T^{12} - 124\,312\,808\,988 T^{13} + 297\,172\,490\,964 T^{14} - 664\,684\,526\,728 T^{15} + \\
 & 1\,389\,807\,634\,296 T^{16} - 2\,708\,428\,298\,888 T^{17} + 4\,887\,987\,422\,896 T^{18} - 8\,067\,388\,214\,328 T^{19} + \\
 & 11\,863\,303\,353\,032 T^{20} - 14\,583\,160\,602\,160 T^{21} + 11\,865\,346\,486\,776 T^{22} + 5\,388\,232\,042\,536 T^{23} - \\
 & 53\,767\,750\,585\,816 T^{24} + 160\,484\,370\,318\,048 T^{25} - 366\,134\,715\,679\,576 T^{26} + \\
 & 725\,902\,586\,091\,816 T^{27} - 1\,307\,679\,730\,234\,272 T^{28} + 2\,185\,647\,844\,579\,336 T^{29} - \\
 & 3\,428\,523\,507\,647\,352 T^{30} + 5\,083\,002\,915\,335\,568 T^{31} - 7\,154\,768\,970\,968\,180 T^{32} + \\
 & 9\,591\,246\,207\,031\,412 T^{33} - 12\,271\,395\,252\,102\,144 T^{34} + 15\,007\,530\,266\,256\,964 T^{35} - \\
 & 17\,562\,060\,399\,410\,900 T^{36} + 19\,678\,450\,137\,280\,464 T^{37} - 21\,121\,488\,770\,721\,428 T^{38} + \\
 & 21\,718\,524\,438\,436\,428 T^{39} - 21\,391\,977\,550\,315\,716 T^{40} + 20\,174\,926\,204\,615\,600 T^{41} - \\
 & 18\,205\,606\,494\,364\,196 T^{42} + 15\,702\,090\,013\,676\,796 T^{43} - 12\,923\,452\,487\,175\,152 T^{44} + \\
 & 10\,126\,823\,829\,638\,156 T^{45} - 7\,529\,942\,915\,246\,388 T^{46} + 5\,286\,389\,796\,431\,704 T^{47} - \\
 & 3\,476\,580\,592\,717\,560 T^{48} + 2\,113\,341\,772\,394\,232 T^{49} - 1\,157\,720\,325\,207\,296 T^{50} + \\
 & 539\,332\,577\,294\,808 T^{51} - 175\,988\,442\,011\,256 T^{52} - 11\,020\,850\,846\,176 T^{53} + \\
 & 87\,510\,205\,057\,352 T^{54} - 102\,602\,766\,228\,024 T^{55} + 89\,160\,637\,786\,584 T^{56} - \\
 & 66\,674\,871\,919\,312 T^{57} + 45\,032\,598\,983\,592 T^{58} - 28\,065\,267\,017\,800 T^{59} + 16\,317\,809\,304\,400 T^{60} - \\
 & 8\,904\,665\,797\,752 T^{61} + 4\,575\,672\,164\,536 T^{62} - 2\,217\,414\,005\,632 T^{63} + 1\,013\,783\,759\,700 T^{64} - \\
 & 437\,013\,397\,092 T^{65} + 177\,370\,882\,224 T^{66} - 67\,631\,418\,756 T^{67} + 24\,152\,638\,660 T^{68} - \\
 & 8\,045\,970\,592 T^{69} + 2\,487\,262\,260 T^{70} - 708\,700\,476 T^{71} + 184\,492\,660 T^{72} - 43\,370\,160 T^{73} + \\
 & 9\,060\,500 T^{74} - 1\,644\,236 T^{75} + 250\,416 T^{76} - 30\,236 T^{77} + 2\,596 T^{78} - 120 T^{79} \Big) x y + \\
 & \frac{1}{T^{40}} \left(55 - 1131 T + 12\,636 T^2 - 100\,973 T^3 + 642\,087 T^4 - 3\,435\,186 T^5 + 15\,991\,099 T^6 - \right. \\
 & 66\,224\,265 T^7 + 247\,805\,679 T^8 - 847\,363\,030 T^9 + 2\,670\,284\,727 T^{10} - 7\,804\,579\,881 T^{11} + \\
 & 21\,259\,038\,720 T^{12} - 54\,161\,884\,083 T^{13} + 129\,384\,587\,931 T^{14} - 290\,232\,483\,676 T^{15} + \\
 & 611\,572\,926\,306 T^{16} - 1\,209\,452\,189\,550 T^{17} + 2\,238\,711\,115\,612 T^{18} - 3\,857\,588\,264\,070 T^{19} + \\
 & 6\,124\,554\,328\,638 T^{20} - 8\,779\,385\,567\,800 T^{21} + 10\,855\,669\,033\,722 T^{22} - 10\,087\,432\,402\,290 T^{23} + \\
 & 2\,121\,321\,508\,262 T^{24} + 20\,364\,862\,823\,436 T^{25} - 68\,413\,603\,384\,914 T^{26} + 157\,059\,153\,640\,854 T^{27} - \\
 & 304\,693\,923\,241\,416 T^{28} + 531\,148\,119\,205\,242 T^{29} - 854\,318\,200\,805\,154 T^{30} + \\
 & 1\,285\,577\,676\,208\,128 T^{31} - 1\,824\,712\,015\,641\,843 T^{32} + 2\,455\,585\,264\,927\,607 T^{33} - \\
 & 3\,143\,969\,505\,507\,468 T^{34} + 3\,838\,776\,182\,850\,561 T^{35} - 4\,477\,261\,420\,421\,363 T^{36} + \\
 & 4\,993\,752\,737\,489\,802 T^{37} - 5\,330\,351\,006\,344\,455 T^{38} + 5\,447\,274\,490\,843\,581 T^{39} - \\
 & 5\,330\,351\,006\,344\,455 T^{40} + 4\,993\,752\,737\,489\,802 T^{41} - 4\,477\,261\,420\,421\,363 T^{42} + \\
 & 3\,838\,776\,182\,850\,561 T^{43} - 3\,143\,969\,505\,507\,468 T^{44} + 2\,455\,585\,264\,927\,607 T^{45} - \\
 & 1\,824\,712\,015\,641\,843 T^{46} + 1\,285\,577\,676\,208\,128 T^{47} - 854\,318\,200\,805\,154 T^{48} + \\
 & 531\,148\,119\,205\,242 T^{49} - 304\,693\,923\,241\,416 T^{50} + 157\,059\,153\,640\,854 T^{51} - \\
 & 68\,413\,603\,384\,914 T^{52} + 20\,364\,862\,823\,436 T^{53} + 2\,121\,321\,508\,262 T^{54} - 10\,087\,432\,402\,290 T^{55} + \\
 & 10\,855\,669\,033\,722 T^{56} - 8\,779\,385\,567\,800 T^{57} + 6\,124\,554\,328\,638 T^{58} - 3\,857\,588\,264\,070 T^{59} + \\
 & 2\,238\,711\,115\,612 T^{60} - 1\,209\,452\,189\,550 T^{61} + 611\,572\,926\,306 T^{62} - 290\,232\,483\,676 T^{63} + \\
 & 129\,384\,587\,931 T^{64} - 54\,161\,884\,083 T^{65} + 21\,259\,038\,720 T^{66} - 7\,804\,579\,881 T^{67} + \\
 & 2\,670\,284\,727 T^{68} - 847\,363\,030 T^{69} + 247\,805\,679 T^{70} - 66\,224\,265 T^{71} + 15\,991\,099 T^{72} - \\
 & 3\,435\,186 T^{73} + 642\,087 T^{74} - 100\,973 T^{75} + 12\,636 T^{76} - 1131 T^{77} + 55 T^{78} \Big) x^2 y^2 \Big] \Big] \Big\}
 \end{aligned}$$