```
In[•]:= ddtheta1 =
 FullSimplify[(789 212 160 * 2^(1/2) * Sin[2 * theta1] - 60 963 840 * 2^(1/2) * Sin[2 * theta2] -
     31 079 786 880 * Cos[2 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
     1 847 370 240 * Cos[2 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
     921 225 600 * Cos[3 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     1 544 590 080 * Cos[3 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     132 321 600 * Cos[4 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
     247 510 080 * Cos[3 * theta1 + 4 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     539 654 400 * Cos[4 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     428 068 800 * Cos[4 * theta1 + 4 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     7 094 016 000 * 2^(1/2) * Cos[2 * theta1 + 2 * theta2] +
     933 120 000 * 2^(1/2) * Cos[2 * theta1 + 3 * theta2] -
     63 590 400 * 2^(1/2) * Cos[3 * theta1 + 2 * theta2] -
     352 512 000 * 2^(1/2) * Cos[3 * theta1 + 3 * theta2] -
     10 368 000 * 2^(1/2) * Cos[4 * theta1 + 2 * theta2] +
     55 987 200 * 2^(1/2) * Cos[3 * theta1 + 4 * theta2] -
     62 208 000 * 2^(1/2) * Cos[4 * theta1 + 3 * theta2] -
     93 312 000 * 2^(1/2) * Cos[4 * theta1 + 4 * theta2] - 2 983 910 400 * thetadot1 *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
     2 621 652 480 * thetadot2 * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] -
         30 * Sin[theta1] + 95)^(1/2) - 27 575 935 872 * Sin[2 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     616 465 728 * Sin[2 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     2 474 530 560 * Sin[3 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     7 331 757 120 * Sin[3 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     260 323 200 * Sin[4 * theta1 + 2 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     4 665 600 * Sin[3 * theta1 + 4 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     1 053 388 800 * Sin[4 * theta1 + 3 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     817 257 600 * Sin[4 * theta1 + 4 * theta2] *
      (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
     6 293 237 760 * 2^(1/2) * Sin[2 * theta1 + 2 * theta2] -
     245 099 520 * 2^(1/2) * Sin[2 * theta1 + 3 * theta2] -
     557 107 200 * 2^(1/2) * Sin[3 * theta1 + 2 * theta2] -
     1 665 100 800 * 2^(1/2) * Sin[3 * theta1 + 3 * theta2] -
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20 736 000 * 2^(1/2) * Sin[4 * theta1 + 2 * theta2] -
124 416 000 * 2^(1/2) * Sin[4 * theta1 + 3 * theta2] -
186 624 000 * 2^(1/2) * Sin[4 * theta1 + 4 * theta2] - 35 022 112 320 *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
7 560 576 000 * 2^(1/2) + 83 714 100 480 * Cos[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
17 828 812 800 * 2^(1/2) * Cos[theta1 + theta2] + 5 951 332 800 * Sin[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
1 666 483 200 * 2^(1/2) * Sin[theta1 + theta2] - 2 617 727 550 * thetadot1^2 *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
(6 036 926 475 * thetadot2^2 * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] -
       30 * Sin[theta1] + 95)^(1/2)) / 2 + 74 359 120 320 * Cos[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
21 502 302 720 * Cos[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
36 725 760 * (54 * Cos[theta2] - 90 * 5^(1/2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^(1/2) * Cos[theta1 - ArcTan[2]] + 215)^(1/2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
7 461 504 000 * 2^(1/2) * Cos[theta1] + 3 048 192 000 * 2^(1/2) * Cos[theta2] +
4 699 641 600 * Sin[theta1] * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] -
     30 * Sin[theta1] + 95)^(1/2) - 18 303 003 840 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
2 294 784 000 * 2^(1/2) * Sin[theta1] - 363 340 800 * 2^(1/2) * Sin[theta2] +
8 009 683 200 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
7 438 279 680 * Cos[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
19 864 669 440 * Cos[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
235 068 480 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
252 423 360 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
635 904 000 * 2^(1/2) * Cos[theta1 - theta2] - 1 975 449 600 * 2^(1/2) *
 Cos[theta1 + 2 * theta2] + 2 052 864 000 * 2^(1/2) * Cos[2 * theta1 + theta2] +
18 662 400 * 2^(1/2) * Cos[theta1 + 3 * theta2] +
20 044 800 * 2^(1/2) * Cos[3 * theta1 + theta2] - 11 931 840 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
3 004 957 440 * Sin[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
36 506 531 712 * Sin[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
51 321 600 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
10 376 640 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
148 608 000 * 2^(1/2) * Sin[theta1 - theta2] + 1 737 676 800 * 2^(1/2) *
 Sin[theta1 + 2 * theta2] + 4 492 615 680 * 2^(1/2) * Sin[2 * theta1 + theta2] +
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149 299 200 * 2^(1/2) * Sin[theta1 + 3 * theta2] -
691 200 * 2^(1/2) * Sin[3 * theta1 + theta2] - 4 443 742 080 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) + 187 721 280 *
  Cos[2 * theta2] * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^
    (1/2) + 186 624 000 * 2^(1/2) * Cos[2 * theta1] -
176 256 000 * 2^(1/2) * Cos[2 * theta2] - 8 894 308 032 * Sin[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) - 248 346 432 *
  Sin[2 * theta2] * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^
    (1/2) + 1 007 884 800 * thetadot1 * Cos[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
2 320 081 920 * thetadot1 * Cos[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
620 524 800 * thetadot2 * Cos[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
1 414 402 560 * thetadot2 * Cos[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
2 286 331 668 * thetadot1^2 * Sin[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
42 231 942 * thetadot1^2 * Sin[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
787 251 240 * thetadot1^2 * Sin[3 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
(4 916 185 281 * thetadot2^2 * Sin[2 * theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
749 954 430 * thetadot1^2 * Sin[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
18 924 300 * thetadot1^2 * Sin[4 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
(75 972 411 * thetadot2^2 * Sin[2 * theta1 + 3 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(424 015 065 * thetadot2^2 * Sin[3 * theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
5 832 000 * thetadot1^2 * Sin[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
79 477 200 * thetadot1^2 * Sin[4 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
6 998 400 * thetadot2^2 * Sin[2 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
(1 415 734 065 * thetadot2^2 * Sin[3 * theta1 + 3 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 -
36 450 * thetadot2^2 * Sin[4 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
68 112 900 * thetadot1^2 * Sin[4 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
17 860 500 * thetadot2^2 * Sin[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
21 811 275 * thetadot2^2 * Sin[4 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
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62 505 675 * thetadot2^2 * Sin[4 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
656 100 * thetadot2^2 * Sin[4 * theta1 + 5 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
364 500 * thetadot2^2 * Sin[5 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
1 093 500 * thetadot2^2 * Sin[5 * theta1 + 5 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
18 155 520 * Sin[2 * theta1 + 2 * theta2] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
691 200 * Sin[3 * theta1 + 2 * theta2] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
2 073 600 * Sin[3 * theta1 + 3 * theta2] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
1 362 424 320 * thetadot1 * Sin[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
165 196 800 * thetadot1 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
963 719 424 * thetadot2 * Sin[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
165 265 920 * thetadot2 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
130 636 800 * thetadot1 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
645 004 800 * thetadot1 * Cos[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
58 544 640 * thetadot1 * Cos[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
52 876 800 * thetadot2 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
21 772 800 * thetadot1 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
3 110 400 * thetadot1 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
293 932 800 * thetadot2 * Cos[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
41 990 400 * thetadot2 * Cos[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
1 555 200 * thetadot2 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
1 555 200 * thetadot2 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
7 921 619 520 * thetadot1^2 * Cos[theta1 + theta2] *
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  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(14 678 749 125 * thetadot2 ^ 2 * Cos[theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
136 857 600 * Cos[theta1 + theta2] * (54 * Cos[theta2] - 90 * 5 ^ (1 / 2) *
      Cos[theta1 + theta2 - ArcTan[2]] - 30 * 5 ^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^
   (1 / 2) * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
211 880 448 * thetadot1 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
678 136 320 * thetadot1 * Sin[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
250 145 280 * thetadot1 * Sin[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
105 940 224 * thetadot2 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
6 594 048 * thetadot1 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
6 220 800 * thetadot1 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
347 860 224 * thetadot2 * Sin[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
166 821 120 * thetadot2 * Sin[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
3 297 024 * thetadot2 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
3 110 400 * thetadot2 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
1 101 307 950 * thetadot1 ^ 2 * Sin[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(1 133 606 205 * thetadot2 ^ 2 * Sin[theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
72 576 000 * Sin[theta1 + theta2] * (54 * Cos[theta2] - 90 * 5 ^ (1 / 2) *
      Cos[theta1 + theta2 - ArcTan[2]] - 30 * 5 ^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^
   (1 / 2) * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^
   (1 / 2) - 7 810 560 * thetadot1 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
204 595 200 * thetadot1 * Cos[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
3 006 720 * thetadot2 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
95 385 600 * thetadot2 * Cos[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
6 858 064 530 * thetadot1 ^ 2 * Cos[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
2 500 376 600 * thetadot1 ^ 2 * Cos[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(336 877 965 * thetadot2 ^ 2 * Cos[theta1] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(1 687 460 175 * thetadot2 ^ 2 * Cos[theta2] * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] -
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      30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 - 47 001 600 * Cos[theta1] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
46 080 * Cos[theta2] * (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
27 855 360 * thetadot1 * Sin[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
27 440 640 * thetadot1 * Sin[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
103 680 * thetadot2 * Sin[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
103 680 * thetadot2 * Sin[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
1 203 768 000 * thetadot1^2 * Sin[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
1 922 621 210 * thetadot1^2 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
1 346 796 000 * thetadot2^2 * Sin[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 959 334 190 * thetadot2^2 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) + 12 441 600 *
 Sin[theta1] * (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
92 160 * Sin[theta2] * (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
98 288 640 * thetadot1 * Cos[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
23 016 960 * thetadot1 * Cos[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
19 699 200 * thetadot1 * Cos[3 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
105 546 240 * thetadot2 * Cos[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
5 598 720 * thetadot1 * Cos[2 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
34 214 400 * thetadot1 * Cos[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
39 709 440 * thetadot2 * Cos[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
13 996 800 * thetadot2 * Cos[3 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
9 331 200 * thetadot1 * Cos[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 799 360 * thetadot2 * Cos[2 * theta1 + 4 * theta2] *
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  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
29 548 800 * thetadot2 * Cos[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
4 665 600 * thetadot2 * Cos[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
807 397 200 * thetadot1 ^ 2 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
873 742 320 * thetadot1 ^ 2 * Cos[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
3 885 873 800 * thetadot1 ^ 2 * Cos[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
266 130 360 * thetadot2 ^ 2 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
19 461 870 * thetadot1 ^ 2 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
123 708 510 * thetadot1 ^ 2 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(3 360 490 965 * thetadot2 ^ 2 * Cos[theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(830 642 175 * thetadot2 ^ 2 * Cos[2 * theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
8 275 365 * thetadot2 ^ 2 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
7 649 235 * thetadot2 ^ 2 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
1 382 400 * Cos[theta1 + 2 * theta2] *
  (54 * Cos[theta2] - 90 * 5 ^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5 ^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
46 080 * Cos[2 * theta1 + theta2] *
  (54 * Cos[theta2] - 90 * 5 ^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
     30 * 5 ^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
(11 115 882 375 * thetadot1 * thetadot2 *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
527 592 960 * thetadot1 * Sin[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
83 566 080 * thetadot1 * Sin[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
39 398 400 * thetadot1 * Sin[3 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
499 633 920 * thetadot2 * Sin[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
68 428 800 * thetadot1 * Sin[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
311 040 * thetadot2 * Sin[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
27 993 600 * thetadot2 * Sin[3 * theta1 + 2 * theta2] *
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  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
18 662 400 * thetadot1 * Sin[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
59 097 600 * thetadot2 * Sin[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
9 331 200 * thetadot2 * Sin[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 543 190 * thetadot1^2 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
177 699 240 * thetadot1^2 * Sin[theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
2 413 901 668 * thetadot1^2 * Sin[2 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
194 077 215 * thetadot2^2 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
4 860 000 * thetadot1^2 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
174 804 810 * thetadot1^2 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
(2 234 584 935 * thetadot2^2 * Sin[theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(1 757 087 559 * thetadot2^2 * Sin[2 * theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
58 320 000 * thetadot2^2 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
4 213 215 * thetadot2^2 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
11 750 400 * Sin[theta1 + 2 * theta2] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
    30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
92 160 * Sin[2 * theta1 + theta2] *
  (54 * Cos[theta2] - 90 * 5^ (1 / 2) * Cos[theta1 + theta2 - ArcTan[2]] -
    30 * 5^ (1 / 2) * Cos[theta1 - ArcTan[2]] + 215) ^ (1 / 2) *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
725 114 700 * thetadot1^2 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
157 041 450 * thetadot1^2 * Cos[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
70 290 450 * thetadot2^2 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
69 134 175 * thetadot2^2 * Cos[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
601 523 658 * thetadot1^2 * Sin[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
63 421 758 * thetadot1^2 * Sin[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
25 801 713 * thetadot2^2 * Sin[2 * theta1] *
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  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
273 062 637 * thetadot2 ^ 2 * Sin[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 367 705 600 * thetadot1 * Cos[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 163 974 400 * thetadot2 * Cos[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 405 661 696 * thetadot1 * Sin[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
2 077 705 728 * thetadot2 * Sin[theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
3 771 053 700 * thetadot1 ^ 2 * Cos[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
186 089 400 * thetadot1 ^ 2 * Cos[2 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
365 467 500 * thetadot1 ^ 2 * Cos[3 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
2 961 472 650 * thetadot2 ^ 2 * Cos[2 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
137 445 120 * thetadot1 ^ 2 * Cos[3 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
16 212 150 * thetadot1 ^ 2 * Cos[4 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
(818 150 625 * thetadot2 ^ 2 * Cos[2 * theta1 + 3 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
(276 220 215 * thetadot2 ^ 2 * Cos[3 * theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
23 349 870 * thetadot1 ^ 2 * Cos[3 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
68 088 600 * thetadot1 ^ 2 * Cos[4 * theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(448 255 755 * thetadot2 ^ 2 * Cos[3 * theta1 + 3 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
18 225 * thetadot2 ^ 2 * Cos[4 * theta1 + 2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
58 356 450 * thetadot1 ^ 2 * Cos[4 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
(91 668 105 * thetadot2 ^ 2 * Cos[3 * theta1 + 4 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
(38 667 375 * thetadot2 ^ 2 * Cos[4 * theta1 + 3 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
(116 330 175 * thetadot2 ^ 2 * Cos[4 * theta1 + 4 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
729 000 * thetadot2 ^ 2 * Cos[5 * theta1 + 4 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
2 187 000 * thetadot2 ^ 2 * Cos[5 * theta1 + 5 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
37 002 240 * Cos[2 * theta1 + 2 * theta2] *
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(54 * Cos[theta2] - 90 * 5^(1/2) * Cos[theta1 + theta2 - ArcTan[2]] -
    30 * 5^(1/2) * Cos[theta1 - ArcTan[2]] + 215)^(1/2) *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
1 382 400 * Cos[3 * theta1 + 2 * theta2] *
 (54 * Cos[theta2] - 90 * 5^(1/2) * Cos[theta1 + theta2 - ArcTan[2]] -
    30 * 5^(1/2) * Cos[theta1 - ArcTan[2]] + 215)^(1/2) *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
4 147 200 * Cos[3 * theta1 + 3 * theta2] *
 (54 * Cos[theta2] - 90 * 5^(1/2) * Cos[theta1 + theta2 - ArcTan[2]] -
    30 * 5^(1/2) * Cos[theta1 - ArcTan[2]] + 215)^(1/2) *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
9 388 633 350 * thetadot1 * thetadot2 * Cos[2 * theta1 + 2 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
(1 194 217 425 * thetadot1 * thetadot2 * Cos[2 * theta1 + 3 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(955 295 775 * thetadot1 * thetadot2 * Cos[3 * theta1 + 2 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(175 253 355 * thetadot1 * thetadot2 * Cos[3 * theta1 + 3 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
16 193 925 * thetadot1 * thetadot2 * Cos[4 * theta1 + 2 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) -
(233 312 805 * thetadot1 * thetadot2 * Cos[3 * theta1 + 4 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(226 781 775 * thetadot1 * thetadot2 * Cos[4 * theta1 + 3 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(388 854 675 * thetadot1 * thetadot2 * Cos[4 * theta1 + 4 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 -
(13 846 223 457 * thetadot1 * thetadot2 * Sin[2 * theta1 + 2 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 -
(66 855 537 * thetadot1 * thetadot2 * Sin[2 * theta1 + 3 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
(2 027 734 785 * thetadot1 * thetadot2 * Sin[3 * theta1 + 2 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 -
13 996 800 * thetadot1 * thetadot2 * Sin[2 * theta1 + 4 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
(3 194 643 645 * thetadot1 * thetadot2 * Sin[3 * theta1 + 3 * theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 +
18 887 850 * thetadot1 * thetadot2 * Sin[4 * theta1 + 2 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
46 656 000 * thetadot1 * thetadot2 * Sin[3 * theta1 + 4 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
121 481 775 * thetadot1 * thetadot2 * Sin[4 * theta1 + 3 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
194 454 675 * thetadot1 * thetadot2 * Sin[4 * theta1 + 4 * theta2] *
 (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2) +
(43 479 934 005 * thetadot1 * thetadot2 * Cos[theta1 + theta2] *
   (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95)^(1/2)) / 2 -
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(7 775 853 975 * thetadot1 * thetadot2 * Sin[theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
(13 954 482 945 * thetadot1 * thetadot2 * Cos[theta1] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(6 636 664 975 * thetadot1 * thetadot2 * Cos[theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 +
118 944 000 * thetadot1 * thetadot2 * Sin[theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
4 018 387 780 * thetadot1 * thetadot2 * Sin[theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
276 416 280 * thetadot1 * thetadot2 * Cos[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
(8 345 372 805 * thetadot1 * thetadot2 * Cos[theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(10 367 476 975 * thetadot1 * thetadot2 * Cos[2 * theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
2 943 945 * thetadot1 * thetadot2 * Cos[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
139 133 745 * thetadot1 * thetadot2 * Cos[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
328 812 405 * thetadot1 * thetadot2 * Sin[theta1 - theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
(3 441 673 215 * thetadot1 * thetadot2 * Sin[theta1 + 2 * theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
(7 778 480 327 * thetadot1 * thetadot2 * Sin[2 * theta1 + theta2] *
    (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) / 2 -
59 292 000 * thetadot1 * thetadot2 * Sin[theta1 + 3 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
166 703 595 * thetadot1 * thetadot2 * Sin[3 * theta1 + theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
654 565 050 * thetadot1 * thetadot2 * Cos[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
88 166 475 * thetadot1 * thetadot2 * Cos[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) -
619 808 571 * thetadot1 * thetadot2 * Sin[2 * theta1] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) +
448 104 879 * thetadot1 * thetadot2 * Sin[2 * theta2] *
  (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2)) /
(12 * (27 * Cos[theta2] - 90 * Sin[theta1 + theta2] - 30 * Sin[theta1] + 95) ^ (1 / 2) *
  (1 458 000 * Cos[theta1 + 3 * theta2] - 79 777 770 * Cos[theta1 + 2 * theta2] -
    499 064 878 * Cos[2 * theta1 + theta2] - 49 698 135 * Cos[theta1 - theta2] +
    1 692 135 * Cos[3 * theta1 + theta2] - 154 662 960 * Sin[theta1 - theta2] -
    322 174 440 * Sin[theta1 + 2 * theta2] + 386 207 350 * Sin[2 * theta1 + theta2] -
    4 617 405 * Sin[theta1 + 3 * theta2] + 4 722 915 * Sin[3 * theta1 + theta2] -
    108 706 743 * Cos[2 * theta1] + 43 114 293 * Cos[2 * theta2] + 92 014 650 * Sin[2 * theta1] +
    2 750 625 * Sin[2 * theta2] - 583 752 578 * Cos[2 * theta1 + 2 * theta2] -
    46 048 743 * Cos[2 * theta1 + 3 * theta2] + 21 041 040 * Cos[3 * theta1 + 2 * theta2] -
    1 166 400 * Cos[2 * theta1 + 4 * theta2] + 42 115 905 * Cos[3 * theta1 + 3 * theta2] +
    3 154 050 * Cos[4 * theta1 + 2 * theta2] + 2 916 000 * Cos[3 * theta1 + 4 * theta2] +
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13 246 200 * Cos[4 * theta1 + 3 * theta2] + 11 352 150 * Cos[4 * theta1 + 4 * theta2] +
334 663 950 * Sin[2 * theta1 + 2 * theta2] + 1 891 350 * Sin[2 * theta1 + 3 * theta2] +
55 721 250 * Sin[3 * theta1 + 2 * theta2] + 100 216 980 * Sin[3 * theta1 + 3 * theta2] -
2 702 025 * Sin[4 * theta1 + 2 * theta2] + 7 779 645 * Sin[3 * theta1 + 4 * theta2] -
11 348 100 * Sin[4 * theta1 + 3 * theta2] - 9 726 075 * Sin[4 * theta1 + 4 * theta2] -
1 104 787 905 * Cos[theta1 + theta2] - 2 978 386 140 * Sin[theta1 + theta2] -
593 067 270 * Cos[theta1] + 1 409 792 221 * Cos[theta2] -
1 707 400 845 * Sin[theta1] - 43 634 900 * Sin[theta2] + 2 673 262 828))]
```

Out[ ]= $Aborted