```
clc
%1a
clear
gab= [0.528383, 0.758351, -0.381725, 3.32152;
    -0.150539, 0.526175, 0.836945, 3.00205;
    0.835553, -0.384763, 0.392184, 2.63034;
    0, 0, 0, 1];
Tb = [-3;5;-1;-4;2;3];
Rab = gab(1:3,1:3);
pab = gab(1:3,4);
pab_hat = hat(pab(1), pab(2), pab(3));
Adgab = [Rab, pab_hat*Rab ; zeros(3), Rab];
Ta = Adgab* Tb %twist in frame A
%1b
wb = [4; -3; 5; -1; 3; 2];
wa = inv(transpose(Adgab))* wb %Wrench in frame A
Ta =
  -17.1795
    7.4128
   14.2422
   -1.7420
    4.1653
   -2.9352
wa =
   -2.0702
    2.0040
    6.4574
   15.0974
  -23.4907
   11.6657
응2
clear
syms 10 11 theta1 theta2 theta3
w(7:9) = [0; 11/sqrt((10*10)+(11*11)); 10/sqrt((10*10)+(11*11))];
q(1:3) = [0;0;10];
q(4:6) = [0;0;10];
q(7:9) = [0;0;0];
w(1:3) = [0;0;1]; w(4:6) = [-1;0;0];
z=[];
for i =1:3:9
    z = [z, cross(-w(i: i+2), q(i: i+2)), w(i: i+2)];
end
z1 = z(1:6)'
z2 = transpose(z(7:12))
```

```
z3 = transpose(z(13:18))
%position
p_0 = [0;11;10]
%Reference Configuration
gst_0 = [eye(3), p_0; 0,0,0,1]
z1_hat = [hat(z1(4), z1(5), z1(6)), z1(1:3); 0,0,0,1];
z2_{hat} = [hat(z2(4), z2(5), z2(6)), z2(1:3); 0,0,0,1];
z3_{hat} = [hat(z3(4), z3(5), z3(6)), z3(1:3); 0,0,0,1];
%orientation
gst_theta =
expm(z1_hat*theta1)*expm(z2_hat*theta2)*expm(z3_hat*theta3)*gst_0
z1 =
 0
 0
 0
 0
 0
 1
z2 =
   0
 -10
   0
  -1
   0
   0
z3 =
                       0
                       0
                       0
 11/(10^2 + 11^2)^(1/2)
 10/(10^2 + 11^2)^(1/2)
p_0 =
  0
 11
 10
gst_0 =
[ 1, 0, 0, 0]
[ 0, 1, 0, 11]
```

```
[ 0, 0, 1, 10]
[0,0,0,1]
gst_theta =
[(\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(\exp(-theta3*1i)/2 +
  \exp(\text{theta3*1i})/2) - ((10*\exp(-\text{theta3*1i})*(10^2 + 11^2)^(1/2)*1i)
   -10*exp(theta3*1i)*(10^2 + 11^2)^(1/2)*1i)*(exp(-theta2*1i)/2 +
  \exp(theta2*1i)/2)*((\exp(-theta1*1i)*1i)/2 - (\exp(theta1*1i)*1i)/2))/
(2*(10^2 + 11^2)) + ((11*exp(-theta3*1i)*(10^2 + 11^2)^(1/2)*1i)
   -11*exp(theta3*1i)*(10^2 + 11^2)^(1/2)*1i)*((exp(-
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*((exp(-theta2*1i)*1i)/2
   theta3*1i) - 10*exp(theta3*1i))*(exp(-theta1*1i)/2 +
  \exp(theta1*1i)/2)*1i)/(2*(10^2 + 11^2)^(1/2)) - ((exp(-1)^2)^2)
theta2*1i)/2 + exp(theta2*1i)/2)*((exp(-theta1*1i)*1i)/2 -
   (\exp(theta1*1i)*1i)/2)*(10^2*\exp(-theta3*1i) + 10^2*\exp(theta3*1i)
   + 2*11^2)/(2*(10^2 + 11^2)) + (((exp(-theta1*1i)*1i)/2)
   - (exp(theta1*1i)*1i)/2)*((exp(-theta2*1i)*1i)/2 -
   (exp(theta2*1i)*1i)/2)*(-2*10*11 + 10*11*exp(-theta3*1i)
   + 10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)), ((11*exp(-
theta3*1i) - 11*exp(theta3*1i))*(exp(-theta1*1i)/2 +
   \exp(\text{theta1*1i})/2)*1i)/(2*(10^2 + 11^2)^(1/2)) - (((\exp(-1)^2)^2)^2)
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*((exp(-theta2*1i)*1i)/2 -
   (\exp(theta2*1i)*1i)/2)*(11^2*\exp(-theta3*1i) + 11^2*\exp(theta3*1i)
   + 2*10^2)/(2*(10^2 + 11^2)) + ((exp(-theta2*1i)/2 +
  \exp(theta2*1i)/2)*((\exp(-theta1*1i)*1i)/2 - (\exp(theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*1i)/2)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)*(-theta1*1i)
   2*10*11 + 10*11*exp(-theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2)
   + 11^2), - 11*(((10*exp(-theta3*1i) - 10*exp(theta3*1i))*(exp(-theta3*1i))
theta1*1i)/2 + \exp(\text{theta1*1i})/2)*1i)/(2*(10^2 + 11^2)^(1/2))
   + ((exp(-theta2*1i)/2 + exp(theta2*1i)/2)*((exp(-theta2*1i)/2))
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*(10^2*exp(-
theta3*1i) + 10^2 \exp(\text{theta3*1i}) + 2*11^2))/(2*(10^2 + 11^2))
   -(((exp(-theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*((exp(-theta1*1i)*1i)/2)
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(- 2*10*11 +
   10*11*exp(-theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 10*11*exp(-theta3*1i)))/(2*(10^2 + 10*11*exp(-theta3*1i))/(2*(10^2 + 10*11*exp(-theta3*1i))/(2*(
   11^2))) + 10*(((11*exp(-theta3*1i) - 11*exp(theta3*1i))*(exp(-theta3*1i))))))
theta1*1i)/2 + exp(theta1*1i)/2)*1i)/(2*(10^2 + 11^2)^(1/2))
   -(((exp(-theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*((exp(-theta1*1i)*1i)/2)
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(11^2*exp(-theta3*1i)
   + 11^2 \exp(\text{theta3*1i}) + 2*10^2))/(2*(10^2 + 11^2)) + ((\exp(-10^2 + 11^2)))
theta2*1i)/2 + exp(theta2*1i)/2)*((exp(-theta1*1i)*1i)/2 -
   (\exp(theta1*1i)*1i)/2)*(-2*10*11 + 10*11*exp(-theta3*1i) +
   theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*(10*exp(-theta2*1i)*(1/4 - theta2*1i)*(1/4 - theta2*1i)*(1
   1i/4) + 10*exp(theta2*1i)*(1/4 + 1i/4) - (10*exp(theta2))/2)]
                                     (\exp(-theta3*1i)/2 + \exp(theta3*1i)/2)*((\exp(-theta3*1i)/2))
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2) + ((10*exp(-
theta3*1i)*(10^2 + 11^2)^(1/2)*1i - 10*exp(theta3*1i)*(10^2 + 11^2)^2)^2
  11^2)^{(1/2)*1i}(\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(\exp(-theta1*1i)/2)
theta2*1i)/2 + exp(theta2*1i)/2))/(2*(10^2 + 11^2)) - ((11*exp(-1))
theta3*1i)*(10^2 + 11^2)^(1/2)*1i - 11*exp(theta3*1i)*(<math>10^2 + 11^2)
   11^2)^(1/2)*1i)*(exp(-theta1*1i)/2 + exp(theta1*1i)/2)*((exp(-
```

```
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2))/(2*(10^2 + 11^2)),
                                                     -((10*exp(-theta3*1i) - 10*exp(theta3*1i))*((exp(-
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*1i)/(2*(10^2 + 11^2)^(1/2))
    + ((\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(\exp(-theta2*1i)/2 +
   \exp(\text{theta2*1i})/2)*(10^2*\exp(-\text{theta3*1i}) + 10^2*\exp(\text{theta3*1i})
    + 2*11^2)/(2*(10^2 + 11^2)) - ((exp(-theta1*1i)/2 +
   \exp(theta1*1i)/2)*((\exp(-theta2*1i)*1i)/2 - (\exp(theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(
   2*10*11 + 10*11*exp(-theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 10*11*exp(-theta3*1i)))/(2*(10^2 + 10*11*exp(-theta3*1i)))
                                                                                           ((11*exp(-theta3*1i) - 11*exp(theta3*1i))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((exp(-theta3*1i)))*((
    11^2)),
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*1i)/(2*(10^2 +
    11^2)^(1/2)) + ((exp(-theta1*1i)/2 + exp(theta1*1i)/2)*((exp(-
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(11^2*exp(-
theta3*1i) + 11^2 \exp(\text{theta3*1i}) + 2*10^2)/(2*(10^2 + 11^2))
    - ((\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(\exp(-theta2*1i)/2)
    + \exp(theta2*1i)/2)*(-2*10*11 + 10*11*exp(-theta3*1i) +
    10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)),
                                            -11*(((10*exp(-theta3*1i) - 10*exp(theta3*1i))*((exp(-
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*1i)/(2*(10^2 + 11^2)^(1/2))
    -((\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(\exp(-theta2*1i)/2 +
   \exp(theta2*1i)/2)*(10^2*\exp(-theta3*1i) + 10^2*\exp(theta3*1i)
    + 2*11^2))/(2*(10^2 + 11^2)) + ((exp(-theta1*1i)/2 +
   \exp(theta1*1i)/2)*((\exp(-theta2*1i)*1i)/2 - (\exp(theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*1i)/2)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)*(-theta2*1i)
   2*10*11 + 10*11*exp(-theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2)
    + 11^2)) + 10*(((11*exp(-theta3*1i) - 11*exp(theta3*1i))*((exp(-theta3*1i))))))
theta1*1i)*1i)/2 - (exp(theta1*1i)*1i)/2)*1i)/(2*(10^2 + 11^2)^(1/2))
    + ((\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*((\exp(-theta2*1i)*1i)/2 -
    (\exp(theta2*1i)*1i)/2)*(11^2*\exp(-theta3*1i) + 11^2*\exp(theta3*1i)
    + 2*10^2))/(2*(10^2 + 11^2)) - ((exp(-theta1*1i)/2 +
   \exp(theta1*1i)/2)*(\exp(-theta2*1i)/2 + \exp(theta2*1i)/2)*(-2*10*11)
    + 10*11*exp(-theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)))
    + \exp(theta3)*(\exp(-theta1*1i)/2 + \exp(theta1*1i)/2)*(10*exp(-theta1*1i)/2)
theta2*1i)*(1/4 - 1i/4) + 10*exp(theta<math>2*1i)*(1/4 + 1i/4) - 1i/4
    (10*exp(theta2))/2)]
                                                                                                                                                                                                                                                           - ((l1*exp(-
theta3*1i)*(10^2 + 11^2)^(1/2)*1i - 11*exp(theta3*1i)*(10^2
   + 11^2)^(1/2)^1i)^*(\exp(-theta2^1i)/2 + \exp(theta2^1i)/2))/
(2*(10^2 + 11^2)) - ((10*exp(-theta3*1i)*(10^2 + 11^2)^{(1/2)*1i} -
   10*exp(theta3*1i)*(10^2 + 11^2)^(1/2)*1i)*((exp(-theta2*1i)*1i)/2
    -(\exp(theta2*1i)*1i)/2))/(2*(10^2 + 11^2)),
    - (((exp(-theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(10^2*exp(-
theta3*1i) + 10^2 \exp(\text{theta3*1i}) + 2^11^2)/(2^10^2 + 11^2) -
    ((exp(-theta2*1i)/2 + exp(theta2*1i)/2)*(-2*10*11 + 10*11*exp(-1))
theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)),
                   ((\exp(-theta2*1i)/2 + \exp(theta2*1i)/2)*(11^2*\exp(-theta3*1i))
    + 11^2 \exp(\text{theta3*1i}) + 2^10^2)/(2^10^2 + 11^2) + ((\exp(-10^2 + 11^2)) + ((\exp(-10^2 + 11^2))) + ((\exp(-10^2 + 11
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(-2*10*11 + 10*11*exp(-2*10*11)*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*11)*(-2*10*1
```

```
theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)),
                                     - \exp(theta3)*(10*\exp(-theta2*1i)*(1/4)
+ 1i/4) + 10*exp(theta2*1i)*(1/4 - 1i/4) - (10*exp(theta2))/2) +
10*(((\exp(-theta2*1i)/2 + \exp(theta2*1i)/2)*(11^2*\exp(-theta3*1i)
+ 11^2 \exp(\text{theta} 3^* 1i) + 2^* 10^2))/(2^* (10^2 + 11^2)) + ((\exp(-10^2 + 11^2)))/(2^* (10^2 + 11^2)))
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(- 2*10*11 + 10*11*exp(-
theta3*1i) + 10*11*exp(theta3*1i)))/(2*(10^2 + 11^2))) - 11*(((exp(-1)^2 + 11^2)))) - 11*(((exp(-1)^2 + 11^2))))
theta2*1i)*1i)/2 - (exp(theta2*1i)*1i)/2)*(10^2*exp(-theta3*1i)
+ 10^2 \exp(\text{theta3*1i}) + 2^11^2)/(2^10^2 + 11^2) + ((\exp(-
theta2*1i)/2 + exp(theta2*1i)/2)*(-2*10*11 + 10*11*exp(-theta3*1i) +
10*11*exp(theta3*1i)))/(2*(10^2 + 11^2)))]
[
                                                                               0,
                                             0,
          0,
```

5

exp(theta1)\*exp(theta2)\*exp(theta3)]

```
%3
clear
syms 11 12
q(4:6) = [0;0;-12];
q(7:9) = [0;0;0];
q(1:3) = [0,0,0];
w(1:3) = [0;0;1]; w(4:6) = [0;-1;0]; w(7:9) = [0;-1;0];
for i =1:3:9
    z = [z, cross(-w(i: i+2), q(i: i+2)), w(i: i+2)];
end
z1 = z(1:6)'
z2 = transpose(z(7:12))
z3 = z(13:18)'
[0;0;0] = 0 q
gst_0 = [eye(3), p_0; 0,0,0,1]
z1_hat = [hat(z1(4), z1(5), z1(6)), z1(1:3); 0,0,0,1];
z2_{hat} = [hat(z2(4), z2(5), z2(6)), z2(1:3); 0,0,0,1];
z3_{hat} = [hat(z3(4), z3(5), z3(6)), z3(1:3); 0,0,0,1];
gst_theta = expm(z1_hat)*expm(z2_hat)*expm(z3_hat)*gst_0
z1 =
 0
 0
 0
 0
 0
z2 =
 -12
   0
   0
   0
  -1
   0
z3 =
  0
  0
  0
  0
 -1
  0
p_0 =
```

```
0
     0
     0
gst_0 =
     1
           0
                  0
                        0
     0
           1
                  0
                        0
           0
     0
                  1
                        0
     0
           0
                  0
                        1
gst_theta =
[\cos(1)^3 - \cos(1)^*\sin(1)^2, -\sin(1), -2^*\cos(1)^2*\sin(1), -2^*\cos(1)^2
cos(1)*exp(1)*((12*exp(1))/2 - (12*cos(1))/2 + (12*sin(1))/2)]
[\cos(1)^2 \sin(1) - \sin(1)^3, \cos(1), -2 \cos(1) \sin(1)^2, -
\exp(1)*\sin(1)*((12*\exp(1))/2 - (12*\cos(1))/2 + (12*\sin(1))/2)]
              2*cos(1)*sin(1),
                                     0, \cos(1)^2 - \sin(1)^2,
\exp(1)*((12*\cos(1))/2 - (12*\exp(1))/2 + (12*\sin(1))/2)]
                             0,
                                      0,
                                                             0,
                                                 exp(3)
왕4)
%5)
clear
syms 11 12 13 D th1 th2 th3 th4 th5 th6
q(7:9) = [0;11;0];
q(10:12) = [0;0;D];
q(13:15) = [0;11+12;D];
q(16:18) = [0;0;D];
q(1:3) = [0,0,0];
q(4:6) = [0;0;0];
w(1:3) = [0;0;1];
w(4:6) = [1;0;0];
w(7:9) = [1;0;0];
w(10:12) = [0;1;0];
w(13:15) = [1;0;0];
w(16:18) = [0;1;0];
z=[];
for i =1:3:18
    z = [z, cross(-w(i: i+2), q(i: i+2)), w(i: i+2)];
end
z1 = z(1:6)'
z2 = transpose(z(7:12))
z3 = z(13:18)'
z4 = z(19:24)'
z5 = transpose(z(25:30))
z6 = z(31:36)
p_0 = [0;11+12+13;D]
gst_0 = [eye(3), p_0; 0,0,0,1]
```

```
z1_hat = [hat(z1(4), z1(5), z1(6)), z1(1:3); 0,0,0,1];
z2_{hat} = [hat(z2(4), z2(5), z2(6)), z2(1:3); 0,0,0,1];
z3_{hat} = [hat(z3(4), z3(5), z3(6)), z3(1:3); 0,0,0,1];
z4_hat = [hat(z4(4),z4(5),z4(6)), z4(1:3); 0,0,0,1];
z5_{hat} = [hat(z5(4), z5(5), z5(6)), z5(1:3); 0,0,0,1];
z6_{hat} = [hat(z6(4), z6(5), z6(6)), z6(1:3); 0,0,0,1];
gst_theta =
    \texttt{expm(z1\_hat*th1)*expm(z2\_hat*th2)*expm(z3\_hat*th3)*expm(z4\_hat*th4)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*expm(z5\_hat*th2)*ex
 z1 =
      0
      0
      0
      0
      0
      1
z2 =
     0
      0
      0
      1
      0
      0
z3 =
                                                 0
                                                 0
      -conj(11)
                                                 1
                                                 0
                                                 0
z4 =
     -conj(D)
                                           0
                                           0
                                           0
                                           1
                                           0
z5 =
                                                0
                                                D
```

```
- 11 - 12
                                      1
                                     0
                                      0
 z6 =
     -conj(D)
                                  0
                                 0
                                 0
                                  1
                                 0
p_0 =
    11 + 12 + 13
qst 0 =
 [ 1, 0, 0,
                                                                                          01
 [0, 1, 0, 11 + 12 + 13]
 [ 0, 0, 1,
                                                                                          D]
 [ 0, 0, 0,
                                                                                          1]
qst theta =
 [ -((((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((exp(-th2*1i)/2)*((ex
 th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
     (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
 th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2
     -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
     + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th4*1i)*1i)/2)
     -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
     + ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
    \exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)
     -((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-
 th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2)
     -(\exp(th3*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 -
     (\exp(th5*1i)*1i)/2))*((\exp(-th6*1i)*1i)/2 - (\exp(th6*1i)*1i)/2)
     -(((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th1*1i)*1i)/2)
     -(\exp(th1*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2 -
     (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
 th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2 -
     (\exp(th2*1i)*1i)/2))*((\exp(-th4*1i)*1i)/2 - (\exp(th4*1i)*1i)/2)
     -(\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th4*1i)/2 +
     \exp(th4*1i)/2)*(\exp(-th6*1i)/2 + \exp(th6*1i)/2), (((exp(-th2*1i)/2)
     + \exp(th2*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1
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th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th3*1i)/2 +
 \exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)*((exp(-th1*1i)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th4*1i)/2 +
 \exp(th4*1i)/2) + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th1*1i)/2))
th4*1i)*1i)/2 - (exp(th4*1i)*1i)/2))*((exp(-th5*1i)*1i)/2 -
  (\exp(th5*1i)*1i)/2) - ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th2*1i)/2))
th3*1i)/2 + exp(th3*1i)/2)*((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)
  -((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2
  -(\exp(th3*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2),
  ((((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th1*1i)*1i)/2)))
  -(\exp(th1*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2 -
  (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2
  -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
  + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th4*1i)*1i)/2)
  -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
  + ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
 \exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)
  -((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2
  -(\exp(th3*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 -
  (\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)/2 + \exp(th6*1i)/2) -
  (((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th1*1i)*1i)/2 -
  (\exp(th1*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2)
  + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2)
  -(\exp(th1*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2 -
  (\exp(th2*1i)*1i)/2))*((\exp(-th4*1i)*1i)/2 - (\exp(th4*1i)*1i)/2)
  -(\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th4*1i)/2 +
 \exp(th4*1i)/2))*((\exp(-th6*1i)*1i)/2 - (\exp(th6*1i)*1i)/2),
  \exp(th6)*(((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2)*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
  (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)
  -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
  + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th4*1i)*1i)/2)
  -(\exp(th4*1i)*1i)/2))*(11*\exp(-th5*1i)*(1/4 - 1i/4) +
  11*exp(th5*1i)*(1/4 + 1i/4) + 12*exp(-th5*1i)*(1/4 - 1i/4) +
  12*exp(th5*1i)*(1/4 + 1i/4) + (D*exp(th5))/2 - (11*exp(th5))/2 -
  (12*exp(th5))/2 - D*exp(-th5*1i)*(1/4 + 1i/4) - D*exp(th5*1i)*(1/4)
  -1i/4) + ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th3*1i)/2)
  + exp(th3*1i)/2)*((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)
  -((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2
  -(\exp(th3*1i)*1i)/2))*(11*\exp(-th5*1i)*(1/4 + 1i/4) +
  11*\exp(th5*1i)*(1/4 - 1i/4) + 12*\exp(-th5*1i)*(1/4 + 1i/4) +
  12*exp(th5*1i)*(1/4 - 1i/4) - (D*exp(th5))/2 - (11*exp(th5))/2 -
  (12*\exp(th5))/2 + D*\exp(-th5*1i)*(1/4 - 1i/4) + D*\exp(th5*1i)*(1/4 + 1i/4)
  1i/4)) + exp(th5)*(exp(th4)*((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*(exp(-th3*1i)*conj(11)*(1/4
  + 1i/4) - (\exp(th3)*conj(11))/2 + \exp(th3*1i)*conj(11)*(1/4)
  -1i/4)) + ((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*(exp(-th3*1i)*conj(11)*(1/4
  -1i/4) - (\exp(th3)*conj(11))/2 + \exp(th3*1i)*conj(11)*(1/4)
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+ 1i/4))) - ((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2)))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2 -
 (\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)*conj(D)*(1/4 + 1i/4) +
\exp(th4*1i)*conj(D)*(1/4 - 1i/4) - (\exp(th4)*conj(D))/2) + (\exp(-1i/4)*conj(D))/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th4*1i)*conj(D)*(1/4 - 1i/4)
 + \exp(th4*1i)*conj(D)*(1/4 + 1i/4) - (\exp(th4)*conj(D))/2)))
 + ((((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2
 -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
+ (exp(-th1*1i)/2 + exp(th1*1i)/2)*((exp(-th4*1i)*1i)/2 -
 (\exp(th4*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 - (\exp(th5*1i)*1i)/2)
-((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
\exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)
 -((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2))*(11
 + 12 + 13) - ((((exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2)))))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)
 -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
+ (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th4*1i)*1i)/2)
 -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
+ ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
\exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)
 -((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2)
 -(\exp(th3*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 -
(\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)*conj(D)*(1/4 + 1i/4) +
exp(th6*1i)*conj(D)*(1/4 - 1i/4) - (exp(th6)*conj(D))/2)
 th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2
 -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)
 + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th4*1i)*1i)/2)
 -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
 + ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
\exp(th3*1i)/2)*((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)
 -((exp(-th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th1*1i)*1i)/2)
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2)
 -(\exp(th3*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 -
 (\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)/2 + \exp(th6*1i)/2) -
(((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th1*1i)*1i)/2))
 -(\exp(th1*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2
 -(\exp(th2*1i)*1i)/2))*((\exp(-th4*1i)*1i)/2 -
 (\exp(th4*1i)*1i)/2) - (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th1*1i)/2)
th4*1i)/2 + exp(th4*1i)/2))*((exp(-th6*1i)*1i)/2 -
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(\exp(th6*1i)*1i)/2)) - (((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th2*1i)/2))))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
    (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*((exp(-th2*1i)*1i)/2 -
    (\exp(th2*1i)*1i)/2))*((\exp(-th4*1i)*1i)/2 - (\exp(th4*1i)*1i)/2)
     -(\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th4*1i)/2 +
   \exp(th4*1i)/2))*(\exp(-th6*1i)*conj(D)*(1/4 - 1i/4) +
   \exp(th6*1i)*conj(D)*(1/4 + 1i/4) - (\exp(th6)*conj(D))/2)
                                                                                                                                                                                                                     ((((exp(-th1*1i)/2)
    + \exp(th1*1i)/2)*(\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
   \exp(th1*1i)/2*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2
    -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2) -
    ((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
    -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
    + ((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
   \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
    + exp(th1*1i)/2)*((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th5*1i)*1i)/2 -
    (\exp(th5*1i)*1i)/2))*((\exp(-th6*1i)*1i)/2 - (\exp(th6*1i)*1i)/2)
    + (((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
   \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2)*((exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*((exp(-th4*1i)*1i)/2 -
    (\exp(th4*1i)*1i)/2) + (\exp(-th4*1i)/2 + \exp(th4*1i)/2)*((\exp(-th4*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2))*(exp(-th6*1i)/2 +
   exp(th6*1i)/2),
                                                                                                                                                                                                                         -(((exp(-th1*1i)/2)
    + \exp(th1*1i)/2)*(\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
   \exp(th1*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2)
    -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2) -
    ((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
    -(\exp(th4*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 - (\exp(th5*1i)*1i)/2)
    + ((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
   \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
    + exp(th1*1i)/2)*((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(exp(-th5*1i)/2 + exp(th5*1i)/2),
                                                                                                                                                                                            -((((exp(-th1*1i)/2
    + \exp(th1*1i)/2)*(\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
   \exp(th1*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2)
    -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2) -
    ((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
    -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
    + ((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
   \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
    + exp(th1*1i)/2)*((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th5*1i)*1i)/2 -
    (\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)/2 + \exp(th6*1i)/2) + ((\exp(-th6*1i)/2))
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
   \exp(th1*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*((exp(-th4*1i)*1i)/2 -
    (\exp(th4*1i)*1i)/2) + (\exp(-th4*1i)/2 + \exp(th4*1i)/2)*((\exp(-th4*1i)/2))
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((((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
     \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th4*1i)/2 + exp(th4*1i)/2)
      -((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
      -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
      + ((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
     \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
     + \exp(th1*1i)/2)*((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th5*1i)*1i)/2
     -(\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)*conj(D)*(1/4 + 1i/4)
     + \exp(th6*1i)*conj(D)*(1/4 - 1i/4) - (\exp(th6)*conj(D))/2)
      -((((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
     \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th4*1i)/2 + exp(th4*1i)/2)
      -((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
     -(\exp(th4*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 - (\exp(th5*1i)*1i)/2)
      -((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
     \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
      + exp(th1*1i)/2)*((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(exp(-th5*1i)/2 +
     \exp(th5*1i)/2))*(11 + 12 + 13) - \exp(th6)*(((exp(-th1*1i)/2)))*(11 + 12 + 13) - \exp(th6))*(((exp(-th1*1i)/2)))*(11 + 12 + 13) - \exp(th6))*(((exp(-th1*1i)/2)))*(11 + 12 + 13) - \exp(th6))*(((exp(-th1*1i)/2)))*(11 + 12 + 13)) - \exp(th6))*(((exp(-th1*1i)/2)))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(-th1*1i)/2))*((exp(
      + \exp(th1*1i)/2)*(\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-th2*1i)/2))*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
     \exp(th1*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2)
      -(\exp(th2*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2) -
      ((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
      -(\exp(th4*1i)*1i)/2))*(11*\exp(-th5*1i)*(1/4 - 1i/4) +
      11*exp(th5*1i)*(1/4 + 1i/4) + 12*exp(-th5*1i)*(1/4 - 1i/4) +
      12*exp(th5*1i)*(1/4 + 1i/4) + (D*exp(th5))/2 - (11*exp(th5))/2 -
      (12*exp(th5))/2 - D*exp(-th5*1i)*(1/4 + 1i/4) - D*exp(th5*1i)*(1/4)
      -1i/4) + ((\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th2*1i)/2 +
     \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
      + exp(th1*1i)/2)*((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(11*exp(-th5*1i)*(1/4 + 1i/4)
      + 11*exp(th5*1i)*(1/4 - 1i/4) + 12*exp(-th5*1i)*(1/4 + 1i/4) +
      12*exp(th5*1i)*(1/4 - 1i/4) - (D*exp(th5))/2 - (11*exp(th5))/2 -
      (12*exp(th5))/2 + D*exp(-th5*1i)*(1/4 - 1i/4) + D*exp(th5*1i)*(1/4 + 1i/4)
     1i/4)) - exp(th5)*(((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*
      + \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th4*1i)*conj(D)*(1/4 + 1/4))*(exp(-th4*1i)*conj(D)*(1/4 + 1/4))*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(
     1i/4) + exp(th4*1i)*conj(D)*(1/4 - 1i/4) - (exp(th4)*conj(D))/2)
       -\exp(th4)*((\exp(-th1*1i)/2 + \exp(th1*1i)/2)*(\exp(-th2*1i)/2)
     + \exp(th2*1i)/2)*(\exp(-th3*1i)*conj(11)*(1/4 + 1i/4) -
      (\exp(th3)*conj(11))/2 + \exp(th3*1i)*conj(11)*(1/4 - 1i/4))
      + (\exp(-th1*1i)/2 + \exp(th1*1i)/2)*((\exp(-th2*1i)*1i)/2 -
      (\exp(th2*1i)*1i)/2)*(\exp(-th3*1i)*conj(11)*(1/4 - 1i/4) -
      (\exp(th3)*conj(11))/2 + \exp(th3*1i)*conj(11)*(1/4 + 1i/4))) + ((\exp(-th3)*tonj(11))) + ((exp(-th3)*tonj(11))) + ((exp(-th3)*t
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th1\*1i)\*1i)/2 - (exp(th1\*1i)\*1i)/2))\*((exp(-th6\*1i)\*1i)/2 -

(exp(th6\*1i)\*1i)/2),

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th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*1i)/2)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*1i)/2)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*1i)/2)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*(exp(-th4*1i)*conj(D)*(1/4 - th1*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i)*(exp(-th4*1i
     1i/4) + exp(th4*1i)*conj(D)*(1/4 + 1i/4) - (exp(th4)*conj(D))/2)))
    -D*(((((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
    \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2)*((exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*1i)/2)*(exp(-th3*
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th4*1i)/2 + exp(th4*1i)/2)
     -((\exp(-th1*1i)*1i)/2 - (\exp(th1*1i)*1i)/2)*((\exp(-th4*1i)*1i)/2)
     -(\exp(th4*1i)*1i)/2))*(\exp(-th5*1i)/2 + \exp(th5*1i)/2)
     + ((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
    \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2) - (\exp(-th1*1i)/2)
    + \exp(th1*1i)/2)*((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1i)*1i)/2)*((exp(-th2*1
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th5*1i)*1i)/2 -
     (\exp(th5*1i)*1i)/2))*(\exp(-th6*1i)/2 + \exp(th6*1i)/2) - (((\exp(-th6*1i)/2)) + \exp(th6*1i)/2))
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 + exp(th2*1i)/2)*((exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1i)/2)*(exp(-th2*1
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2) + (exp(-th1*1i)/2 +
    \exp(th1*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2)
     -(\exp(th2*1i)*1i)/2))*((\exp(-th4*1i)*1i)/2 - (\exp(th4*1i)*1i)/2)
     + (\exp(-th4*1i)/2 + \exp(th4*1i)/2)*((\exp(-th1*1i)*1i)/2 -
    (\exp(th1*1i)*1i)/2))*((\exp(-th6*1i)*1i)/2 - (\exp(th6*1i)*1i)/2))
     + (((exp(-th1*1i)/2 + exp(th1*1i)/2)*(exp(-th2*1i)/2 +
    \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 - (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)*1i)/2)
th1*1i)/2 + exp(th1*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-th3*1i)/2))*((exp(-t
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*((exp(-th4*1i)*1i)/2 -
     (\exp(th4*1i)*1i)/2) + (\exp(-th4*1i)/2 + \exp(th4*1i)/2)*((\exp(-th4*1i)/2))
th1*1i)*1i)/2 - (exp(th1*1i)*1i)/2))*(exp(-th6*1i)*conj(D)*(1/4 - th6*1i)*1i)/2)
    1i/4) + exp(th6*1i)*conj(D)*(1/4 + 1i/4) - (exp(th6)*conj(D))/2)]
                                                                                      ((exp(-th6*1i)*1i)/2 - (exp(th6*1i)*1i)/2)*(((exp(-th6*1i)*1i)/2))
th2*1i)/2 + exp(th2*1i)/2)*((exp(-th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2)
    + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th2*1i)*1i)/2 -
    (\exp(th2*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 - (\exp(th5*1i)*1i)/2) -
     ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)
     -((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-th3*1i)*1i)/2 -
     (\exp(th3*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)*(\exp(-th5*1i)/2)
    + \exp(th5*1i)/2) - ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th3*1i)/2)
     + \exp(th3*1i)/2) - ((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(exp(-th6*1i)/2 +
    \exp(th6*1i)/2)*((\exp(-th4*1i)*1i)/2 - (\exp(th4*1i)*1i)/2),
                                ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 -
     (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(exp(-th5*1i)/2 + exp(th5*1i)/2)
    + ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 + exp(th3*1i)/2)
     -((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2)
     -(\exp(th3*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)*((\exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((exp(-th4*1i)/2))*((
th5*1i)*1i)/2 - (exp(th5*1i)*1i)/2),
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- (\exp(-th6*1i)/2 + \exp(th6*1i)/2)*((\exp(-th2*1i)/2))*((\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th5*1i)/2)) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2)) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th5*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th3*1i)/2) + (\exp(-th4*1i)/2) + (\exp(-th6*1i)/2) + (\exp(-
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 (((\exp(-\text{th}2*1i)/2 + \exp(\text{th}2*1i)/2)*((\exp(-\text{th}3*1i)*1i)/2 - (\exp(\text{th}3*1i)*1i)/2) + (\exp(-\text{th}3*1i)/2 + \exp(\text{th}3*1i)/2)*((\exp(-\text{th}2*1i)*1i)/2) - (\exp(\text{th}2*1i)*1i)/2))*(\exp(-\text{th}5*1i)/2 + \exp(\text{th}5*1i)/2) + ((\exp(-\text{th}2*1i)/2 + \exp(\text{th}2*1i)/2))*(\exp(-\text{th}3*1i)/2 + \exp(\text{th}3*1i)/2) - ((\exp(-\text{th}2*1i)*1i)/2 - (\exp(\text{th}2*1i)*1i)/2)*((\exp(-\text{th}3*1i)*1i)/2) - (\exp(\text{th}3*1i)*1i)/2))*(\exp(-\text{th}4*1i)/2)*((\exp(-\text{th}5*1i)*1i)/2))*((\exp(-\text{th}5*1i)*1i)/2))*((1 + 12 + 13) - D*((\exp(-\text{th}6*1i)/2 + \exp(\text{th}6*1i)/2))*(((\exp(-\text{th}2*1i)/2 + \exp(\text{th}2*1i)/2))*((\exp(-\text{th}3*1i)*1i)/2) + (\exp(-\text{th}3*1i)/2) + (\exp(\text{th}3*1i)/2) + (\exp(-\text{th}3*1i)/2) + (\exp(\text{th}3*1i)/2))*((\exp(-\text{th}2*1i)/2) + (\exp(-\text{th}3*1i)/2)) + (\exp(-\text{th}3*1i)/2) + (\exp(\text{th}3*1i)/2) + (
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+ \exp(th3*1i)/2) - ((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th4*1i)*1i)/2 -
 (\exp(th4*1i)*1i)/2)*((\exp(-th6*1i)*1i)/2 - (\exp(th6*1i)*1i)/2)) -
 \exp(th6)*(\exp(th5)*(((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th3*1i)/2)))
 + exp(th3*1i)/2) - ((exp(-th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2)*((exp(-
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(exp(-th4*1i)*conj(D)*(1/4 +
 1i/4) + exp(th4*1i)*conj(D)*(1/4 - 1i/4) - (exp(th4)*conj(D))/2)
 -\exp(th4)*((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th2*1i)/2)*)
th3*1i)*conj(11)*(1/4 - 1i/4) - (exp(th3)*conj(11))/2 +
 \exp(th3*1i)*conj(11)*(1/4 + 1i/4)) - ((exp(-th2*1i)*1i)/2
 - (exp(th2*1i)*1i)/2)*(exp(-th3*1i)*conj(11)*(1/4 + 1i/4) -
 (\exp(th3)*conj(11))/2 + \exp(th3*1i)*conj(11)*(1/4 - 1i/4)))
 + ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*((\exp(-th3*1i)*1i)/2 -
 (\exp(th3*1i)*1i)/2) + (\exp(-th3*1i)/2 + \exp(th3*1i)/2)*((\exp(-th3*1i)/2))
th2*1i)*1i)/2 - (exp(th2*1i)*1i)/2))*(11*exp(-th5*1i)*(1/4 + 1i/4)
 + 11*exp(th5*1i)*(1/4 - 1i/4) + 12*exp(-th5*1i)*(1/4 + 1i/4) +
 12*exp(th5*1i)*(1/4 - 1i/4) - (D*exp(th5))/2 - (11*exp(th5))/2 -
 (12*exp(th5))/2 + D*exp(-th5*1i)*(1/4 - 1i/4) + D*exp(th5*1i)*(1/4)
 + 1i/4)) - ((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
 \exp(th3*1i)/2) - ((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*(exp(-th4*1i)/2 +
 \exp(th4*1i)/2)*(11*\exp(-th5*1i)*(1/4 - 1i/4) + 11*\exp(th5*1i)*(1/4)
 + 1i/4) + 12*exp(-th5*1i)*(1/4 - 1i/4) + 12*exp(th5*1i)*(1/4 + 1
 1i/4) + (D^*\exp(th5))/2 - (11^*\exp(th5))/2 - (12^*\exp(th5))/2 - D^*\exp(-11/4)
th5*1i)*(1/4 + 1i/4) - D*exp(th5*1i)*(1/4 - 1i/4))) + (((exp(-
th2*1i)/2 + exp(th2*1i)/2)*((exp(-th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2)
 + (exp(-th3*1i)/2 + exp(th3*1i)/2)*((exp(-th2*1i)*1i)/2 -
 (\exp(th2*1i)*1i)/2))*((\exp(-th5*1i)*1i)/2 - (\exp(th5*1i)*1i)/2) -
 ((\exp(-th2*1i)/2 + \exp(th2*1i)/2)*(\exp(-th3*1i)/2 + \exp(th3*1i)/2)
 -((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th3*1i)*1i)/2)
 -(\exp(th3*1i)*1i)/2))*(\exp(-th4*1i)/2 + \exp(th4*1i)/2)*(\exp(-th4*1i)/2)
th5*1i)/2 + exp(th5*1i)/2))*(exp(-th6*1i)*conj(D)*(1/4 + 1i/4)
 + \exp(th6*1i)*conj(D)*(1/4 - 1i/4) - (exp(th6)*conj(D))/2)
 -((exp(-th2*1i)/2 + exp(th2*1i)/2)*(exp(-th3*1i)/2 +
 \exp(th3*1i)/2) - ((\exp(-th2*1i)*1i)/2 - (\exp(th2*1i)*1i)/2)*((\exp(-th2*1i)*1i)/2)
th3*1i)*1i)/2 - (exp(th3*1i)*1i)/2))*((exp(-th4*1i)*1i)/2
 -(\exp(th4*1i)*1i)/2)*(\exp(-th6*1i)*conj(D)*(1/4 - 1i/4) +
 exp(th6*1i)*conj(D)*(1/4 + 1i/4) - (exp(th6)*conj(D))/2)]
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