a p2 P2 z2 Z2 - a p3 P3 z2 Z2 + 1 / 2 I a p1 P2 z2 ^ 2 Z2 - 1 / 2 I a p1 p2 z2 Z2 ^ 2 -1 / 4 I p1 P3 z3 + G P2 p3 Z2 z3 - a p2 P3 Z2 z3 - I a p1 P3 z2 Z2 z3 - 1 / 2 I G p1 p3 Z2 ^2 z3 + 1/2 I G p1 P2 Z2 z3^2 + 1 / 4 I p1 p3 Z3 - a P2 p3 z2 Z3 + g p2 P3 z2 Z3 + 1 / 2 I g p1 P3 z2^2 Z3 + I a p1 p3 z2 Z2 Z3 - 1 / 4 p1 ^ 2 z3 Z3 - a p2 P2 z3 Z3 + a p3 P3 z3 Z3 - I a p1 P2 z2 z3 Z3 + I a p1 p2 Z2 z3 Z3 + 1 / 2 I a p1 P3 z3^2 Z3 - 1 / 2 I g p1 p2 z2 Z3^2 - 1 / 2 I a p1 p3 z3 Z3^2 $\frac{1}{2}$ <u>i</u> a P2 z2² Z2 + $\frac{1}{2}$ <u>i</u> a p2 z2 Z2² + $\frac{\text{i}}{2}$ P3 z3 + G P2 p3 Z2 z3 - a p2 P3 Z2 z3 + i a P3 z2 Z2 z3 + $\frac{1}{2}$ i G p3 Z2² z3 - $\frac{1}{2}$ i G P2 Z2 z3² - $\frac{\text{i p3 Z3}}{4}$ - a P2 p3 z2 Z3 + g p2 P3 z2 Z3 $-\frac{1}{2}$ <u>i</u> g P3 z2² Z3 - <u>i</u> a p3 z2 Z2 Z3 $-\frac{z3}{4}$ - a p2 P2 z3 Z3 + a p3 P3 z3 Z3 + i a P2 z2 z3 Z3 - i a p2 Z2 z3 Z3 - $\frac{1}{2}$ i a P3 z3² Z3 + $\frac{1}{2}$ i g p2 z2 Z3² + $\frac{1}{2}$ i a p3 z3 Z3² $lo(\pi) = 2 p0 p1 - \frac{p2 P2}{4} - \frac{p3 P3}{4} - \frac{1}{4} \pm p1 P2 z2 + \frac{1}{4} \pm p1 p2 Z2 - (p1^2 z2 Z2) / 4 +$ a p2 P2 z2 Z2 - a p3 P3 z2 Z2 + $\frac{1}{2}$ \pm a p1 P2 z2² Z2 - $\frac{1}{2}$ \pm a p1 p2 z2 Z2² - $\frac{1}{4}$ i p1 P3 z3 + G P2 p3 Z2 z3 - a p2 P3 Z2 z3 - i a p1 P3 z2 Z2 z3 - $\frac{1}{2}$ i G p1 p3 Z2² z3 + $\frac{1}{2}$ \pm G p1 P2 Z2 z3² + $\frac{1}{4}$ \pm p1 p3 Z3 - a P2 p3 z2 Z3 + g p2 P3 z2 Z3 + $\frac{1}{2}$ \pm g p1 P3 z2² Z3 + $\dot{\mathbf{n}}$ a p1 p3 z2 Z2 Z3 - $\frac{1}{4}$ p1² z3 Z3 - a p2 P2 z3 Z3 + a p3 P3 z3 Z3 - $\dot{\mathbf{n}}$ a p1 P2 z2 z3 Z3 + $\dot{\mathbf{n}}$ a p1 p2 Z2 z3 Z3 + $\frac{1}{2}$ $\dot{\mathbf{n}}$ a p1 P3 z3² Z3 - $\frac{1}{2}$ $\dot{\mathbf{n}}$ g p1 p2 z2 Z3² - $\frac{1}{2}$ $\dot{\mathbf{n}}$ a p1 p3 z3 Z3²

 $ln[\circ] := dz2 := 2 * D[H, P2]$

$$\textit{Out}[*] = 2 \left(-\frac{p2}{4} + \frac{\text{i} z2}{4} + \text{a p2 z2 Z2} - \frac{1}{2} \text{ i} \text{ a z2}^2 \text{ Z2} + \right. \\ \left. \text{G p3 Z2 z3} - \frac{1}{2} \text{ i} \text{ G Z2 z3}^2 - \text{a p3 z2 Z3} - \text{a p2 z3 Z3} + \text{i} \text{ a z2 z3 Z3} \right)$$

$$ln[\bullet]:= dp2 := -2 * D[H, Z2]$$

$$\textit{Out}[*] = -2 \left(-\frac{\text{ii} \ \text{p2}}{4} - \frac{\text{z2}}{4} + \text{a} \ \text{p2} \ \text{P2} \ \text{z2} - \text{a} \ \text{p3} \ \text{P3} \ \text{z2} - \frac{1}{2} \ \text{ii} \ \text{a} \ \text{P2} \ \text{z2}^2 + \text{ii} \ \text{a} \ \text{p2} \ \text{z2} \ \text{Z2} + \text{G} \ \text{P2} \ \text{p3} \ \text{z3} - \text{a} \ \text{p3} \ \text{z3} - \text{a} \ \text{p3} \ \text{z2} \ \text{z3} + \text{ii} \ \text{a} \ \text{P3} \ \text{z2} \ \text{z3} + \text{ii} \ \text{G} \ \text{P3} \ \text{Z2} \ \text{z3} - \frac{1}{2} \ \text{ii} \ \text{G} \ \text{P2} \ \text{z3}^2 - \text{ii} \ \text{a} \ \text{p3} \ \text{z2} \ \text{Z3} - \text{ii} \ \text{a} \ \text{p2} \ \text{z3} \ \text{Z3} \right)$$

$$ln[\circ] := dz3 := 2 * D[H, P3]$$

$$\textit{Out[*]= } 2 \left(-\frac{p3}{4} - a \ p3 \ z2 \ Z2 + \frac{i \cdot z3}{4} - a \ p2 \ Z2 \ z3 + i \cdot a \ z2 \ Z2 \ z3 + g \ p2 \ z2 \ Z3 - \frac{1}{2} \ i \ g \ z2^2 \ Z3 + a \ p3 \ z3 \ Z3 - \frac{1}{2} \ i \ a \ z3^2 \ Z3 \right)$$

$$ln[\bullet]:= dp3 := -2 * D[H, Z3]$$

$$\textit{Out}[*] = -2 \left(-\frac{\text{ii} \ p3}{4} - \text{a} \ P2 \ p3 \ z2 + g \ p2 \ P3 \ z2 - \frac{1}{2} \ \text{ii} \ g \ P3 \ z2^2 - \text{ii} \ \text{a} \ p3 \ z2 \ Z2 - \frac{z3}{4} - \text{a} \ p2 \ P2 \ z3 + \text{a} \ p3 \ p3 \ z3 + \text{ii} \ \text{a} \ P2 \ z2 \ z3 - \text{ii} \ \text{a} \ p2 \ Z2 \ z3 - \frac{1}{2} \ \text{ii} \ \text{a} \ P3 \ z3^2 + \text{ii} \ g \ p2 \ z2 \ Z3 + \text{ii} \ \text{a} \ p3 \ z3 \ Z3 \right)$$

$$\begin{array}{l} \mathit{h(+)} = \ d\mathsf{Z2} \ \ / \ \ (\mathsf{Z2} \ \to \mathsf{Z3st}, \ \mathsf{Z3} \ \to \mathsf{Z3st}, \ \mathsf{Z3st}, \$$

In[*]:= Expand[%36]

In[*]:= Collect[%37, s]

$$\textit{Out[*]} = \; \frac{1}{2} \; e^{i \; t} \; \left(1 + e^{-i \; t} \right) \; C \left[1 \right] \; - \; \frac{1}{2} \; i \; e^{i \; t} \; \left(-1 + e^{-i \; t} \right) \; C \left[2 \right]$$

ln[*]:= dp2 /. {z2 \rightarrow z2st, z3 \rightarrow z3st, Z2 \rightarrow Z2st, Z3 \rightarrow Z3st, p2 \rightarrow p2st, p3 \rightarrow p3st, P2 \rightarrow P2st, P3 \rightarrow P3st}

$$\begin{split} \cos^{(i)} &- 2 \left(-\frac{1}{4} \stackrel{i}{i} \left(\left(\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c2 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) + \\ & \frac{1}{4} \left(-\left(-\frac{1}{2} \stackrel{i}{i} \text{ c2 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} - \text{ s}^3 \text{ z23} \right) + \\ & a \left(\left(\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c2 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p33 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c2 } e^{-i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p33 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p33 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c2 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c2 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c2 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c2 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c2 } e^{i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{-i \stackrel{i}{t}} \left(-1 + e^{-i \stackrel{i}{t}} \right) + \frac{1}{2} \text{ c1 } e^{i \stackrel{i}{t}} \left(1 + e^{-i \stackrel{i}{t}} \right) \right) \text{ s} + \text{p23 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \stackrel{i}{i} \text{ c1 } e^{-i \stackrel{i}{t}} \left(-$$

$$\begin{split} &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ s}^3 \text{ z} 33\right) + \\ &\text{i } \text{ a } \left(\left(-\frac{1}{2} \text{ i } \text{ D1 } \text{ e}^{-\text{i } \text{ t}} \left(-1 + \text{ e}^{\text{i } \text{ t}}\right) + \frac{1}{2} \text{ D2 } \text{ e}^{-\text{i } \text{ t}} \left(1 + \text{ e}^{\text{i } \text{ t}}\right)\right) \text{ s} + \text{ P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ c2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ c1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ s}^3 \text{ z23}\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ s}^3 \text{ z33}\right) + \\ &\text{i } \text{ G} \left(\left(\frac{1}{2} \text{ i } \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ s}^3 \text{ z33}\right) + \\ &\text{i } \text{ G} \left(\left(\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ p33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{\text{i } \text{ t}}\right)\right) \text{ s} + \text{ s}^3 \text{ z33}\right) - \\ &\text{i } \text{ a} \left(\left(\frac{1}{2} \text{ i } \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ p33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ p33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ p33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t}} \left(-1 + \text{ e}^{-\text{i } \text{ t}}\right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i } \text{ t}} \left(1 + \text{ e}^{-\text{i } \text{ t}}\right)\right) \text{ s} + \text{ p33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } \text{ d2 } \text{ e}^{\text{i } \text{ t$$

In[*]:= Expand [%39]

 $\frac{1}{4} \pm a \text{ C1 c2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \pm a \text{ c1 C2 d2 } e^{\pm t} \text{ s}^3 - \frac{5}{4} \text{ a c2 C2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d1 D1 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D1 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D2 d2 } e^{\pm t} \text{ s}^3 + \frac{3}{4} \text{ a d2 D2 d2 } e^{\pm t} \text{ c2 D2 d2 } e^{\pm t} \text{$ $\frac{1}{2} \pm a \, D1 \, d2^2 \, e^{i \, t} \, s^3 - \frac{1}{2} \, a \, d1^2 \, D2 \, e^{i \, t} \, s^3 - \frac{3}{4} \pm a \, d1 \, d2 \, D2 \, e^{i \, t} \, s^3 + \frac{5}{2} \, a \, d2^$ $\frac{3}{4}$ i a c1 C1 d1 e^{2it} s³ - $\frac{3}{4}$ a C1 c2 d1 e^{2it} s³ - $\frac{3}{4}$ a c1 C2 d1 e^{2it} s³ - $\frac{3}{4}$ i a c2 C2 d1 e^{2it} s³ - $\frac{3}{8} \pm a \, d1^2 \, D1 \, e^{2 \, i \, t} \, s^3 \, - \, \frac{3}{4} \, a \, c1 \, C1 \, d2 \, e^{2 \, i \, t} \, s^3 \, - \, \frac{3}{4} \pm a \, C1 \, c2 \, d2 \, e^{2 \, i \, t} \, s^3 \, - \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \, i \, t} \, s^3 \, + \, \frac{3}{4} \pm a$ $\frac{3}{4}$ a c2 C2 d2 e^{2it} s³ + $\frac{3}{4}$ a d1 D1 d2 e^{2it} s³ + $\frac{3}{9}$ i a D1 d2² e^{2it} s³ + $\frac{3}{9}$ a d1² D2 e^{2it} s³ + $\frac{3}{4} \pm a \, d1 \, d2 \, D2 \, e^{2 \pm t} \, s^3 - \frac{3}{8} \, a \, d2^2 \, D2 \, e^{2 \pm t} \, s^3 - \frac{1}{8} \pm c1^2 \, D1 \, g \, s^3 + \frac{1}{4} \, c1 \, c2 \, D1 \, g \, s^3 - \frac{1}{8} \, d^2 \, d^2$ $\frac{3}{2} \pm c2^2 \, D1 \, g \, s^3 - \frac{3}{2} \, c1^2 \, D2 \, g \, s^3 + \frac{1}{4} \pm c1 \, c2 \, D2 \, g \, s^3 - \frac{1}{2} \, c2^2 \, D2 \, g \, s^3 + \frac{1}{2} \pm c1^2 \, D1 \, e^{-i \, t} \, g \, s^3 + \frac{1}{2} \pm c1^2 \, D1 \, e$ $\frac{1}{4} \text{ c1 c2 D1 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{8} \text{ i c2}^2 \text{ D1 } \text{ e}^{-\text{i t}} \text{ g s}^3 + \frac{1}{8} \text{ c1}^2 \text{ D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ i c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1} \text{ c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1} \text{ c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1} \text{ c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1} \text{ c2 D2 } \text{ c2} \text$ $\frac{1}{2} \, \text{c2}^2 \, \text{D2} \, \text{e}^{-\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{5}{2} \, \text{i} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{3}{4} \, \text{c1} \, \text{c2} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{1}{2} \, \text{i} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{c2}^3 \, - \, \frac{1}{2} \, \text{c2}^3 \, \text{D1} \, \text{c2}^3 \, - \, \frac{1}{2} \, \text{c2}^3 \, - \, \frac{1}{2} \, \text{c2}^3 \, \text{D1} \, \text{c2}^3 \, - \, \frac{1}{2} \, - \, \frac{1}{2} \, \text{c2}^3 \, - \, \frac{1}{2} \, - \, \frac{1}{2} \, - \, \frac{1}{2} \, - \, \frac{1}{2} \, - \,$ $\frac{1}{8}\,c1^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{4}\,\mathrm{i}\,\,c1\,\,c2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{5}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c1^2\,D1\,\,\mathrm{e}^{2\,\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c1^2\,D1\,\,\mathrm{e}^{2\,\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,-\,\frac{3}{8}\,\mathrm{i}\,\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^3\,+\,\frac{1}{8}\,c2^2\,D2\,\,\mathrm{e}^{\mathrm{i}\,t}\,g\,\,s^$ $\frac{3}{4} \text{ c1 c2 D1 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{2} \text{ i c2}^2 \text{ D1 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{2} \text{ c1}^2 \text{ D2 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{4} \text{ i c1 c2 D2 } \text{ e}^{2 \text{ it}} \text{ g s}^3 - \frac{3}{4} \text{ e}^2 \text{ c1}^2 \text{ c2} \text{ c2}$ $\frac{3}{2} \text{ c2}^2 \text{ D2 } \text{ e}^{2 \text{ i t}} \text{ g s}^3 - \frac{\text{p33 s}^3}{2} - \text{a C1 d1 p23 s}^5 - \text{a C2 d2 p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C1 d1 } \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ e}^{-\text{i t}} \text{ p23 s}^5 + \frac{1}{2} \text{ p23 s}^5 + \frac{1}{2} \text{ p23 s}^5 + \frac{1}{2} \text{ p33 s}^5 + \frac{1}{2}$ $\frac{1}{2} \pm a \text{ C2 d1 } e^{-i t} \text{ p23 s}^5 + \frac{1}{2} \pm a \text{ C1 d2 } e^{-i t} \text{ p23 s}^5 + \frac{1}{2} \text{ a C2 d2 } e^{-i t} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } e^{i t} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } e^{-i t} \text{ a C1 d$ $\frac{1}{2} \pm a \ C2 \ d1 \ e^{i \ t} \ p23 \ s^5 - \frac{1}{2} \pm a \ C1 \ d2 \ e^{i \ t} \ p23 \ s^5 + \frac{1}{2} \ a \ C2 \ d2 \ e^{i \ t} \ p23 \ s^5 + c1 \ D1 \ g \ p23 \ s^5 + c1$ c2 D2 g p23 s⁵ + $\frac{1}{2}$ c1 D1 e^{-it} g p23 s⁵ - $\frac{1}{2}$ i c2 D1 e^{-it} g p23 s⁵ - $\frac{1}{2}$ i c1 D2 e^{-it} g p23 s⁵ - $\frac{1}{2} \text{ c2 D2 } \text{ e}^{-\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ c1 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ i c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ i c1 D2 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 - \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}}$ $\frac{1}{2}$ c2 D2 $e^{i t}$ g p23 s⁵ – a c1 C1 p33 s⁵ – a c2 C2 p33 s⁵ + a d1 D1 p33 s⁵ + a d2 D2 p33 s⁵ – $\frac{1}{2} \text{ a d1 D1 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ i a D1 d2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ i a d1 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ a d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ a d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ a d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ p33 s}^5 - \frac{1}{2} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ b} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ b} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ b d2 D2 } \text{ e}^{-\text{i t}} \text{ b} \text{$ $\frac{1}{2}$ a c1 C1 e^{it} p33 $s^5 - \frac{1}{2}$ i a C1 c2 e^{it} p33 $s^5 - \frac{1}{2}$ i a c1 C2 e^{it} p33 $s^5 + \frac{1}{2}$ a c2 C2 e^{it} p33 $s^5 + \frac{1}{2}$ $\frac{1}{2} \text{ a d1 D1 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ i a D1 d2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ i a d1 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} - \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a d2 D2 } \text{ e}^{\text{i t}} \text{ a d2 D2 } \text{ e}^$ $ilde{\mathtt{i}}$ a C1 d1 s 5 z23 + a C2 d1 s 5 z23 - a C1 d2 s 5 z23 + $ilde{\mathtt{i}}$ a C2 d2 s 5 z23 + $ilde{\mathtt{i}}$ a C1 d1 $extstyle{\mathbb{C}}^{ ilde{\mathtt{i}}}$ t s 5 z23 a C2 d1 $e^{i\,t}$ s⁵ z23 - a C1 d2 $e^{i\,t}$ s⁵ z23 - i a C2 d2 $e^{i\,t}$ s⁵ z23 - i c1 D1 g s⁵ z23 + c2 D1 g s⁵ z23 $c1 \ D2 \ g \ s^5 \ z23 - 1 \ c2 \ D2 \ g \ s^5 \ z23 - 1 \ c1 \ D1 \ e^{1 \ t} \ g \ s^5 \ z23 + c2 \ D1 \ e^{1 \ t} \ g \ s^5 \ z23 + c1 \ D2$ i c2 D2 e^{it} g s⁵ z23 + D1 g p23 s⁷ z23 + i D2 g p23 s⁷ z23 + D1 e^{-it} g p23 s⁷ z23 i D2 e^{-it} g p23 s⁷ z23 – a C1 p33 s⁷ z23 – i a C2 p33 s⁷ z23 – a C1 e^{-it} p33 s⁷ z23 +

$$\begin{array}{l} i \text{ a C2 } e^{-i\,t} \text{ p } 33 \text{ s}^7 \text{ z } 23 - \frac{1}{2} \text{ i D 1 g } \text{ s}^7 \text{ z } 23^2 + \frac{1}{2} \text{ D 2 g } \text{ s}^7 \text{ z } 23^2 - \frac{1}{2} \text{ i D 1 e}^{-i\,t} \text{ g } \text{ s}^7 \text{ z } 23^2 - \frac{1}{2} \\ \hline \frac{1}{2} \text{ D 2 e}^{-i\,t} \text{ g } \text{ s}^7 \text{ z } 23^2 - \frac{1}{2} \text{ i a c1 d1 s}^5 \text{ Z 23} - \frac{1}{2} \text{ a c2 d1 s}^5 \text{ Z 23} - \frac{1}{2} \text{ a c1 d2 s}^5 \text{ Z 23} + \frac{1}{2} \\ \hline \frac{1}{2} \text{ i a c2 d2 s}^5 \text{ Z 23} + \text{ i a c1 d1 e}^{i\,t} \text{ s}^5 \text{ Z 23} + \text{ i a c2 d2 e}^{i\,t} \text{ s}^5 \text{ Z 23} + \frac{3}{2} \text{ i a c1 d1 e}^{2\,i\,t} \text{ s}^5 \text{ Z 23} - \frac{3}{2} \\ \hline \frac{3}{2} \text{ a c2 d1 e}^{2\,i\,t} \text{ s}^5 \text{ Z 23} - \frac{3}{2} \text{ a c1 d2 e}^{2\,i\,t} \text{ s}^5 \text{ Z 23} - \frac{3}{2} \\ \hline \text{ i a d2 p 23 s}^7 \text{ Z 23} - \text{ a d1 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ i a d2 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ a c1 p 23 s}^7 \text{ Z 23} + \frac{3}{2} \\ \hline \text{ i a d2 p 23 s}^7 \text{ Z 23} - \text{ a d1 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ i a d2 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ a c1 p 23 s}^7 \text{ Z 23} + \frac{3}{2} \\ \hline \text{ i a d2 p 23 s}^7 \text{ Z 23} - \text{ a c1 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ i a d2 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ a c1 p 23 s}^7 \text{ Z 23} + \frac{3}{2} \\ \hline \text{ i a d2 p 23 s}^7 \text{ Z 23} - \text{ a c1 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ i a d2 e}^{i\,t} \text{ p 23 s}^7 \text{ Z 23} - \text{ a c1 p 23 s}^7 \text{ Z 23} + \frac{3}{2} \\ \hline \text{ a d2 e}^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 e}^{i\,t} \text{ p 23 s}^7 \text{ z 23} - \text{ 22 a p 23 s}^3 \text{ s}^2 \text{ z 23} - \text{ 22 a p 23 s}^3 \text{ s}^2 \text{ z 23} - \text{ 22 a p 23 s}^3 \text{ s}^2 \text{ 223} - \text{ 223 a 23} + \frac{3}{2} \text{ a c1 C1 c}^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} - \text{ a c1 c2 c^{i\,t} \text{ s}^5 \text{ z 23} + \text{$$

Inf@]:= Collect[%40, s]

$$\begin{split} & \text{DSolve} \Big[\Big\{ \texttt{l'[t]} = -\frac{\texttt{m[t]}}{2} - \frac{\texttt{ip1} * \texttt{l[t]}}{2} \,, \\ & \quad \texttt{m'[t]} = -\frac{1}{2} \, \texttt{ip1} * \texttt{m[t]} + \frac{\texttt{p1}^2 * \texttt{l[t]}}{2} \Big\}, \, \{ \texttt{l[t]}, \texttt{m[t]} \}, \, t \Big] \\ & \quad \text{Out[*]=} \, \Big\{ \Big\{ \texttt{l[t]} \to \texttt{e}^{\frac{\texttt{it}}{2}} \, \texttt{C[1]} \, \texttt{Cos} \Big[\frac{\texttt{t}}{2} \Big] - \texttt{e}^{\frac{\texttt{it}}{2}} \, \texttt{C[2]} \, \texttt{Sin} \Big[\frac{\texttt{t}}{2} \Big] \,, \, \texttt{m[t]} \to \texttt{e}^{\frac{\texttt{it}}{2}} \, \texttt{C[2]} \, \texttt{Cos} \Big[\frac{\texttt{t}}{2} \Big] + \texttt{e}^{\frac{\texttt{it}}{2}} \, \texttt{C[1]} \, \texttt{Sin} \Big[\frac{\texttt{t}}{2} \Big] \Big\} \Big\} \end{split}$$

$$\begin{split} & & & & = \frac{1}{2} \, \, e^{-i \, p \, 1 \, t} \, \left(1 + e^{i \, p \, 1 \, t} \right) \, C \, [1] \, + \, \frac{i \, e^{-i \, p \, 1 \, t} \, \left(-1 + e^{i \, p \, 1 \, t} \right) \, C \, [2]}{2 \, p \, 1} \\ & & & & = \frac{1}{2} \, e^{i \, t} \, \left(1 + e^{-i \, t} \right) \, C \, [1] \, - \, \frac{1}{2} \, i \, e^{i \, t} \, \left(-1 + e^{-i \, t} \right) \, C \, [2] \\ & & & & = \frac{1}{2} \, i \, e^{-i \, p \, 1 \, t} \, \left(-1 + e^{i \, p \, 1 \, t} \right) \, p \, 1 \, C \, [1] \, + \, \frac{1}{2} \, e^{-i \, p \, 1 \, t} \, \left(1 + e^{i \, p \, 1 \, t} \right) \, C \, [2] \\ & & & & = \frac{1}{2} \, i \, e^{i \, t} \, \left(-1 + e^{-i \, t} \right) \, C \, [1] \, + \, \frac{1}{2} \, e^{i \, t} \, \left(1 + e^{-i \, t} \right) \, C \, [2] \end{split}$$

In[•]:= Expand [%45]

In[*]:= Collect[%, s]

$$\begin{aligned} \text{Out[*]$=$} & \left\{ \left\{ \text{l[t]} \to \frac{\text{C[1]}}{2} + \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{C[1]} - \frac{1}{2} \, \text{i} \, \text{C[2]} + \frac{1}{2} \, \text{i} \, \text{e}^{\text{i} \, \text{t}} \, \text{C[2]} \right\} \\ & \text{m[t]} \to \frac{1}{2} \, \text{ii} \, \text{C[1]} - \frac{1}{2} \, \text{ii} \, \text{e}^{\text{i} \, \text{t}} \, \text{C[1]} + \frac{\text{C[2]}}{2} + \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{C[2]} \right\} \right\} \end{aligned}$$

 $ln[@]:= dp3 /. \{z2 \rightarrow z2st, z3 \rightarrow z3st, Z2 \rightarrow Z2st,$ Z3 \rightarrow Z3st, p2 \rightarrow p2st, p3 \rightarrow p3st, P2 \rightarrow P2st, P3 \rightarrow P3st}

$$\begin{aligned} & \text{Out}(*) = -2 \, \left(-\frac{1}{4} \, \text{i} \, \left(\left(\frac{1}{2} \, \text{i} \, \text{d} 1 \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{d} 2 \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^2 \right) - \\ & \text{a} \, \left(\left(-\frac{1}{2} \, \text{i} \, \text{C1} \, \text{e}^{-\text{i} \, \text{t}} \, \left(-1 + \text{e}^{\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C2} \, \text{e}^{-\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \\ & \left(\left(\frac{1}{2} \, \text{i} \, \text{d} 1 \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{d2} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{D1} \, \text{e}^{-\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{D1} \, \text{e}^{-\text{i} \, \text{t}} \, \left(-1 + \text{e}^{\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{D2} \, \text{e}^{-\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C1} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{s}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C1} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{s}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C1} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{s}^3 \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{C1} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{\text{i} \, \text{t}} \right) \right) \, \text{S} + \text{p33} \, \text{S}^3 \right) \right) \\ & \left(\left(-\frac{1}{2} \, \text{i} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{\text{i} \, \text{t}} \right) + \frac{1}{2}$$

$$\begin{split} &\left(\left(-\frac{1}{2} \text{ i } D1 \text{ } e^{-i \text{ t }} \left(-1 + e^{i \text{ t }}\right) + \frac{1}{2} D2 \text{ } e^{-i \text{ t }} \left(1 + e^{i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } d2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ d1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{S}^3 \text{ z33}\right) + \\ &\text{i } a \left(\left(-\frac{1}{2} \text{ i } C1 \text{ } e^{-i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ C2 } e^{-i \text{ t }} \left(1 + e^{i \text{ t }}\right)\right) \text{ s } + \text{P23 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } c2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{S}^3 \text{ z23}\right) \\ &\left(\left(-\frac{1}{2} \text{ i } d2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ d1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{S}^3 \text{ z23}\right) \\ &\left(\left(\frac{1}{2} \text{ i } c1 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c2 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(\frac{1}{2} \text{ i } c2 \text{ } e^{-i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ d1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{S}^3 \text{ z23}\right) \\ &\left(\left(-\frac{1}{2} \text{ i } d2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ d1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{S}^3 \text{ z33}\right) - \frac{1}{2} \text{ i } \text{ a} \left(\left(-\frac{1}{2} \text{ i } D1 \text{ } e^{-i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ D2 } e^{-i \text{ t }} \left(1 + e^{i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } d2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ d1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } c2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } c2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } c2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c1 } e^{i \text{ t }} \left(1 + e^{-i \text{ t }}\right)\right) \text{ s } + \text{P33 } \text{ s}^3\right) \\ &\left(\left(-\frac{1}{2} \text{ i } d2 \text{ } e^{i \text{ t }} \left(-1 + e^{-i \text{ t }}\right) + \frac{1}{2} \text{ c$$

In[•]:= Expand [%48]

$$\text{DSolve} \Big[\Big\{ \text{l'[t]} = -\frac{\text{m[t]}}{2} - \frac{\text{inpl * l[t]}}{2} \Big\}, \\ \text{m'[t]} = -\frac{1}{2} \, \text{inpl * m[t]} + \frac{\text{pl}^2 \, * \, \text{l[t]}}{2} \Big\}, \\ \{ \text{l[t]}, \, \text{m[t]} \}, \, \text{t} \Big]$$

$$\text{Out[*]} = \Big\{ \Big\{ \text{l[t]} \rightarrow \text{e}^{\frac{\text{i}\, \text{t}}{2}} \, \text{C[1]} \, \text{Cos} \Big[\frac{\text{t}}{2} \Big] - \text{e}^{\frac{\text{i}\, \text{t}}{2}} \, \text{C[2]} \, \text{Sin} \Big[\frac{\text{t}}{2} \Big], \, \text{m[t]} \rightarrow \text{e}^{\frac{\text{i}\, \text{t}}{2}} \, \text{C[2]} \, \text{Cos} \Big[\frac{\text{t}}{2} \Big] + \text{e}^{\frac{\text{i}\, \text{t}}{2}} \, \text{C[1]} \, \text{Sin} \Big[\frac{\text{t}}{2} \Big] \Big\} \Big\}$$

$$\text{In[*]} = \frac{1}{2} \, \text{e}^{-\text{i}\, \text{pl}\, \text{t}} \, \Big(1 + \text{e}^{-\text{i}\, \text{t}} \Big) \, \text{C[1]} + \frac{\text{i}\, \text{e}^{-\text{i}\, \text{pl}\, \text{t}} \, \Big(-1 + \text{e}^{-\text{i}\, \text{t}} \Big) \, \text{C[2]}}{2 \, \text{pl}}$$

$$\text{Out[*]} = \frac{1}{2} \, \text{e}^{\text{i}\, \text{t}} \, \Big(1 + \text{e}^{-\text{i}\, \text{t}} \Big) \, \text{C[1]} - \frac{1}{2} \, \text{i} \, \text{e}^{\text{i}\, \text{t}} \, \Big(-1 + \text{e}^{-\text{i}\, \text{t}} \Big) \, \text{C[2]}$$

$$\ln[e] := Z21 := \frac{1}{2} e^{-i p1 t} (1 + e^{i p1 t}) * C1 + \frac{i e^{-i p1 t} (-1 + e^{i p1 t}) * C2}{2 p1}$$

$$ln[\circ] := p1 := -1$$

$$lo[e] := Z21 := \frac{1}{2} i * C2 * e^{-i t} (-1 + e^{i t}) + \frac{1}{2} C1 * e^{-i t} (1 + e^{i t})$$

$$\ln[e] := p21 := -\frac{1}{2} \pm e^{-i p1 t} \left(-1 + e^{i p1 t}\right) * p1 * c1 + \frac{1}{2} e^{-i p1 t} \left(1 + e^{i p1 t}\right) * c2$$

$$\ln[e] := P21 := -\frac{1}{2} i * C1 * e^{-it} (-1 + e^{it}) + \frac{1}{2} * C2 * e^{-it} (1 + e^{it})$$

$$\ln[e] = Z31 := \frac{1}{2} e^{-i p1 t} \left(1 + e^{i p1 t}\right) * d1 + \frac{i e^{-i p1 t} \left(-1 + e^{i p1 t}\right) * d2}{2 p1}$$

$$ln[•]:=$$
 1 + 1

$$\ln[e] := p31 := -\frac{1}{2} i e^{-i p1t} \left(-1 + e^{i p1t}\right) p1 * d1 + \frac{1}{2} e^{-i p1t} \left(1 + e^{i p1t}\right) * d2$$

$$ln[\cdot]:= P31 := -\frac{1}{2} i * D1 * e^{-it} (-1 + e^{it}) + \frac{1}{2} * D2 * e^{-it} (1 + e^{it})$$

$$\begin{aligned} & \textit{M}(\cdot) \text{P} \quad \text{d22} \ /. \ \ (22 \to z2st, \ z3 \to z3st, \ z3 \to p2 \to p2st, \ p3 \to p3st, \ P2 \to P2st, \ P3 \to P3st) \\ & \text{Out}(\cdot) \text{P} \quad 2 \ \left(\frac{1}{4} \ \left(-\left(\frac{1}{2} \text{ icl } e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c2} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} - p23 \text{ s}^3 \right) + \\ & \frac{1}{4} \text{ i} \left(\left(-\frac{1}{2} \text{ icl } e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c2} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} - p23 \text{ s}^3 \right) + \\ & \text{a} \left(\left(\frac{1}{2} \text{ icl } e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c2} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p23 \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \text{ ic2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p23 \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \text{ ic2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ ic2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ z23} \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{-it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{-it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{-it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{-it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right) \text{ s} + p3 \text{ s}^3 \text{ z23} \right) \right) \\ & \left(\left(-\frac{1}{2} \text{ id2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} \text{ c1} e^{it} \left(1 + e^{-it} \right) \right)$$

In[*]:= Expand [%169]

$$\textit{Out[*]} = -\frac{1}{2} \, \, \text{i} \, \, \text{D1 S} + \frac{\text{D2 S}}{2} + \frac{1}{2} \, \, \text{i} \, \, \text{D1 e}^{-\text{i t}} \, \, \text{S} + \frac{1}{2} \, \, \text{D2 e}^{-\text{i t}} \, \, \text{S} + \text{P33 S}^3$$

$$\textit{Out[*]} = \left(-\; \frac{1}{2} \; \dot{\mathbb{1}} \; \, e^{-\, \dot{\mathbb{1}} \; \, t} \; \left(-\; 1 \; + \; e^{\, \dot{\mathbb{1}} \; \, t} \right) \; k \; -\; \frac{1}{2} \; \dot{\mathbb{1}} \; \, e^{-\, \dot{\mathbb{1}} \; t} \; \left(1 \; + \; e^{\, \dot{\mathbb{1}} \; t} \right) \; k \right) \; s \; + \; P33 \; s^3$$

 $ln[\cdot]:= dp2 /. \{z2 \rightarrow z2st, z3 \rightarrow z3st, Z2 \rightarrow Z2st,$

$$\begin{array}{lll} \text{Z3} & \rightarrow \text{Z3st}, \ \text{p2} \rightarrow \text{p2st}, \ \text{p3} \rightarrow \text{p3st}, \ \text{P2} \rightarrow \text{P2st}, \ \text{P3} \rightarrow \text{P3st} \\ & -2 \left(-\frac{1}{4} i \left(\left(\frac{1}{2} i \text{c1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p23} \, s^3 \right) + \\ & \frac{1}{4} \left(-\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c1} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p23} \, s^3 \right) \\ & = \left(\left(\frac{1}{2} i \, \text{c1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p23} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p23} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c1} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{d1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c1} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{d1} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c1} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c1} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c2} \, e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c1} \, e^{i t} \left(-1 + e^{i t} \right) + \frac{1}{2} \, \text{c2} \, e^{i t} \left(1 + e^{-i t} \right) \right) \, s + \text{p33} \, s^3 \right) \\ & = \left(\left(-\frac{1}{2} i \, \text{c1} \, e^{i t} \left(-1 + e^{-i t} \right) +$$

$$\begin{split} &\left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} d1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + s^3 z 33\right) + \\ &i \ G \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} d1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 s^3\right) \\ &\left(\left(\frac{1}{2} \stackrel{i}{\text{i}} C2 \stackrel{e^{-\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} C1 \stackrel{e^{-\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{\text{i}} \stackrel{t}{\text{t}}\right)\right) s + s^3 z 23\right) \\ &\left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} d1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{\text{i}} \stackrel{t}{\text{t}}\right)\right) s + s^3 z 33\right) - \\ &\frac{1}{2} \stackrel{i}{\text{i}} G \left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} C1 \stackrel{e^{-\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} d1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 s^3\right) \\ &\left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 s^3\right) \\ &\left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} c1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 s^3\right) \\ &\left(\left(\frac{D1}{2} + \frac{\text{i}}{2} D2}{2} + \frac{1}{2} D1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} - \frac{1}{2} \stackrel{i}{\text{i}} D2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 s^3\right) \\ &\left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} d2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} c1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 z^3\right) \\ &\left(\left(-\frac{D1}{2} \stackrel{i}{\text{t}} c1 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 z^3\right) \\ &\left(\left(-\frac{D1}{2} \stackrel{i}{\text{t}} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right) + \frac{1}{2} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{t}}\right)\right) s + p 33 z^3\right) \\ &\left(\left(-\frac{D1}{2} \stackrel{i}{\text{t}} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(-1 + e^{-\text{i}} \stackrel{t}{\text{c}}\right) + \frac{1}{2} c2 \stackrel{e^{\text{i}}{\text{t}}}{\text{c}} \left(1 + e^{-\text{i}} \stackrel{t}{\text{c}}\right)\right)\right) s + p 33 z^3\right) \\ &\left(\left$$

In[*]:= Expand [%172]

$$\begin{aligned} & \frac{1}{4} \text{ a c1}^2 \text{ C1 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ a C1 c2}^2 \text{ e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ i a c1}^2 \text{ C2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{2} \text{ a c1 c2 C2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ a c1 d1 D1 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ a c2 D1 d2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \\ & \text{i a c1 d1 D2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ a c2 d1 D2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{2} \text{ a c1 d2 D2 e}^{-\frac{i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{8} \text{ a c1}^2 \text{ C1 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ i a c1 C1 c2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{8} \text{ a C1 c2}^2 \text{ e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \\ & \frac{1}{8} \text{ i a c1}^2 \text{ C2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ a c1 c2 C2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{8} \text{ i a c2}^2 \text{ C2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \\ & \frac{1}{4} \text{ a c1 d1 D1 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{4} \text{ i a c2 d1 D1 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{4} \text{ i a c1 D1 d2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{4} \text{ a c2 D1 d2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{4} \text{ i a c1 d1 D2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{4} \text{ a c2 d1 D2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{4} \text{ a c1 d2 D2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ i a c2 d2 D2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{4} \text{ a c1 d2 D2 e}^{-\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{4} \text{ a c1 d1 D1 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ i a c2 d2 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ a c1 d2 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{4} \text{ a c1 d1 D1 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ i a c1 d2 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] + \frac{1}{4} \text{ a c1 d2 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \\ & \frac{1}{2} \text{ a c2 d1 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ a c1 d2 D2 e}^{\frac{3\,i\,t}{2}} \text{ Cos} \Big[\frac{t}{2}\Big] - \frac{1}{8}$$

 $\frac{1}{4}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1\,\,C\,1\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,a\,\,C\,1\,\,c\,2^2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,-\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,C\,1\,\,c\,2^2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,\dot{\mathbb{1}}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,C\,2\,\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,C\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\big]\,+\,\frac{1}{8}\,\,a\,\,c\,1^2\,\,c\,2\,\,\mathrm{e}^{\frac{5\,\mathrm{i}\,t}{2}}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}{2}\,\,\mathsf{Cos}\,\big[\frac{t}$ $\frac{1}{4} \text{ a c1 c2 C2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ i a c2}^2 \text{ C2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1 d1 D1 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1 d2 D1 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i t}}{2}} \text{ Cos} \left[\frac{t}{$ $\frac{1}{4} \pm a \, \text{c1 d1 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{a c2 d1 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{a c1 d2 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{a c2 d1 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{a c2 d2 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{a c2 d2 D2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \text{e}^{\frac{5 \pm t}{2}} \, + \, \frac{1}{4} \, + \,$ $\frac{1}{4} \; \text{i a c2 d2 D2} \; \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \; \text{Cos} \left[\frac{t}{2} \right] \; + \; \frac{1}{4} \; \text{C1 d1}^2 \; \text{e}^{-\frac{\text{i} \, \text{t}}{2}} \; \text{G Cos} \left[\frac{t}{2} \right] \; - \; \frac{1}{2} \; \text{i C2 d1}^2 \; \text{e}^{-\frac{\text{i} \, \text{t}}{2}} \; \text{G Cos} \left[\frac{t}{2} \right] \; - \; \frac{1}{2} \; \text{operator} \; \text{Cos} \left[\frac{t}{2} \right] \; - \; \frac{1}{2} \; \text{operator} \;$ $\frac{1}{2} \text{C2 d1 d2} \, \, \text{e}^{-\frac{\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, - \, \frac{1}{8} \, \text{C1 d1}^2 \, \, \text{e}^{-\frac{3\,\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, - \, \frac{1}{8} \, \text{C1 d1}^2 \, \, \text{e}^{-\frac{3\,\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, - \, \frac{1}{8} \, \text{C1 d1}^2 \, \, \text{e}^{-\frac{3\,\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, - \, \frac{1}{8} \, \text{C1 d1}^2 \, \, \text{e}^{-\frac{3\,\text{i}\,\text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{e}^{-\frac{1}{2}} \, \text{G} \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, \, \text{Cos} \left[\frac{\text{t}}{2}\right] \, + \, \frac{1}{4} \, \text{C1 d2}^2 \, +$ $\frac{1}{8} \pm \text{C2 d1}^2 \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \pm \text{C1 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ C2 d1 d2 } \text{ e}^{-\frac{3 \pm t}{2}} \text{ e}^{-\frac{3 \pm t}{2}} \text{ G Cos} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ e}^{-\frac{3 \pm t}{2}} \text{ e}^{-\frac{3 \pm t}$ $\frac{1}{8}\,\text{C1}\,\text{d2}^2\,\,\text{e}^{-\frac{3\,\mathrm{i}\,\,t}{2}}\,\text{G}\,\text{Cos}\,\big[\,\frac{t}{2}\,\big]\,-\,\frac{1}{8}\,\,\text{i}\,\,\text{C2}\,\text{d2}^2\,\,\text{e}^{-\frac{3\,\mathrm{i}\,\,t}{2}}\,\text{G}\,\text{Cos}\,\big[\,\frac{t}{2}\,\big]\,-\,\frac{1}{4}\,\text{C1}\,\text{d1}^2\,\,\text{e}^{\frac{3\,\mathrm{i}\,\,t}{2}}\,\text{G}\,\text{Cos}\,\big[\,\frac{t}{2}\,\big]\,-\,\frac{1}{4}\,\text{C1}\,\text{d2}^2\,\,\text{e}^{-\frac{3\,\mathrm{i}\,\,t}{2}}\,\text{G}\,\text{Cos}\,\big[\,\frac{t}{2}\,\big]\,-\,\frac{1}{4}\,\text{C1}\,\text{d2}^2\,\,\text{e}^{-\frac{3\,\mathrm{i}\,\,t}{2}}\,\text{G}\,\text{Cos}\,\big[\,\frac{t}{2}\,\big]\,$ $\frac{1}{2} \pm \text{C2 d1}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] + \frac{1}{2} \, \text{C2 d1 d2} \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{G Cos} \left[\frac{t}{2}\right] - \frac{1}{4} \, \text{C1 d2}^2 \, \text{e}^{\frac{3 \pm t}{2}} \, \text{C1 d2}^2 \, \text{$ $\frac{1}{8} \, \text{C1 d1}^2 \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{8} \, \, \text{i} \, \, \text{C2 d1}^2 \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, - \, \frac{1}{4} \, \, \text{i} \, \, \text{C1 d1 d2} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i} \, \text{t}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, \, \text{G} \, \text{Cos} \left[\frac{t}{2}\right] \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}} \, + \, \frac{1}{4} \, \, \text{e}^{\frac{5 \, \text{i}}{2}}$ $\frac{1}{4} \text{C2 d1 d2} = \frac{5 \text{ it}}{2} \text{G Cos} \left[\frac{t}{2} \right] + \frac{1}{8} \text{C1 d2}^2 = \frac{5 \text{ it}}{2} \text{G Cos} \left[\frac{t}{2} \right] + \frac{1}{8} \text{ it C2 d2}^2 = \frac{5 \text{ it}}{2} \text{G Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a c1}^2 \text{C1 } = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] + \text{a c1 C1 c2} = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] + \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ it a C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t Cos} \left[\frac{t}{2} \right] - \frac{1}{2} \text{ t C1 c2}^2 = \frac{i \text{ t}}{2} \text{ t C1 c2}^2 = \frac{i \text{$ $\frac{1}{2} \text{ a c1}^2 \text{ C2 } \text{ e}^{\frac{\text{i} \, \text{t}}{2}} \text{ t Cos} \Big[\frac{\text{t}}{2}\Big] - \text{i} \text{ a c1 c2 C2 } \text{ e}^{\frac{\text{i} \, \text{t}}{2}} \text{ t Cos} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ a c2}^2 \text{ C2 } \text{ e}^{\frac{\text{i} \, \text{t}}{2}} \text{ t Cos} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ e}^{\frac{\text{t}}{2}} \text{ t Cos} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ t Cos} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{$ $\mathtt{i} \,\,\mathsf{a} \,\,\mathsf{c1} \,\,\mathsf{d1} \,\,\mathsf{D1} \,\,\mathtt{e}^{\frac{\mathtt{i} \,\,\mathsf{t}}{2}} \,\,\mathsf{t} \,\,\mathsf{Cos} \,\big[\frac{\mathsf{t}}{2}\big] \,\,\mathsf{-a} \,\,\mathsf{c2} \,\,\mathsf{d1} \,\,\mathsf{D1} \,\,\mathtt{e}^{\frac{\mathtt{i} \,\,\mathsf{t}}{2}} \,\,\mathsf{t} \,\,\mathsf{Cos} \,\big[\frac{\mathsf{t}}{2}\big] \,\,\mathsf{-a} \,\,\mathsf{c1} \,\,\mathsf{D1} \,\,\mathsf{d2} \,\,\mathtt{e}^{\frac{\mathtt{i} \,\,\mathsf{t}}{2}} \,\,\mathsf{t} \,\,\mathsf{Cos} \,\big[\frac{\mathsf{t}}{2}\big] \,\,\mathsf{-a} \,\,\mathsf{c2} \,\,\mathsf{D1} \,\,\mathsf{d3} \,\,\mathsf{d4} \,\,\mathsf{d4}$ $\texttt{i} \texttt{ a c1 d2 D2} \texttt{ e}^{\frac{\texttt{i}\,\texttt{t}}{2}} \texttt{ t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - a c2 d2 D2} \texttt{ e}^{\frac{\texttt{i}\,\texttt{t}}{2}} \texttt{ t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{1}{2} \texttt{ i C1 d1}^2 \texttt{ e}^{\frac{\texttt{i}\,\texttt{t}}{2}} \texttt{ G t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ e}^{\frac{\texttt{t}\,\texttt{t}}{2}} \texttt{ G t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ e}^{\frac{\texttt{t}\,\texttt{t}}{2}} \texttt{ G t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ e}^{\frac{\texttt{t}\,\texttt{t}}{2}} \texttt{ G t Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ e}^{\frac{\texttt{t}\,\texttt{t}}{2}} \texttt{ Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ e}^{\frac{\texttt{t}\,\texttt{t}}{2}} \texttt{ Cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2} \texttt{ cos} \big[\frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2}\big] \texttt{ - } \frac{\texttt{t}}{2}\big[\frac{\texttt{t}}{2}\big] \texttt$ $\frac{1}{2} \text{ C2 d1}^2 e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C1 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] - \text{i C2 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C1 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C2 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} \text{ G t Cos} \left[\frac{t}{2}\right] + \text{C3 d1 d2 } e^{\frac{i\,t}{2}} + \text{C3 d1 d2 } e^{\frac{i\,$ $\frac{1}{2} \, \, \text{$\stackrel{i}{$}$ C1 } \, \text{$d2^2$ $e^{\frac{i\,t}{2}}$ G t Cos $\left[\frac{t}{2}\right]$ } + \frac{1}{2} \, \text{$C2$ } \, \text{$d2^2$ $e^{\frac{i\,t}{2}}$ G t Cos $\left[\frac{t}{2}\right]$ } + \text{$e^{\frac{i\,t}{2}}$ $C[1]$ Cos $\left[\frac{t}{2}\right]$ } - \text{$e^{\frac{i\,t}{2}}$ } \, \text{G t } \, \text$ $\frac{1}{2} \text{ a c1 C1 c2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ i a C1 c2}^2 e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1}^2 \text{ C2 } e^{-\frac{i \cdot t}{2}} \text{ C2 } e^{-\frac{i \cdot t$ $\frac{1}{4} \text{ a c2}^2 \text{ C2 } \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] + \frac{1}{2} \text{ a c2 d1 D1 } \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] + \frac{1}{2} \text{ a c1 D1 d2 } \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] + \frac{1}{2} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] - \frac{1}{2} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ Sin} \Big[\frac{t}{2}\Big] + \frac{1}{2} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ e}^{-\frac{i}\,t}{2}} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ e}^{-\frac{\text{i}\,t}{2}} \text{ e}^{-\frac{i$ $i \text{ a c2 D1 d2 } e^{-\frac{i\,t}{2}} \operatorname{Sin}\left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{a c1 d1 D2} e^{-\frac{i\,t}{2}} \operatorname{Sin}\left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{a c2 d2 D2} e^{-\frac{i\,t}{2}} \operatorname{Sin}\left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{a c2 d2} \operatorname{D2} e^{-\frac{i\,t}{2}} \operatorname{Sin}\left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{A} \operatorname{CO} \operatorname{D2} e^{-\frac{i\,t}{2}} \operatorname{CO} \operatorname{D2} e^{-\frac{$ $\frac{1}{8}\,\,\dot{\text{a}}\,\,\text{c1}^{2}\,\text{C1}\,\,\text{e}^{-\frac{3\,\dot{\text{i}}\,\,t}{2}}\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\text{a}\,\,\text{c1}\,\text{C1}\,\,\text{c2}\,\,\text{e}^{-\frac{3\,\dot{\text{i}}\,\,t}{2}}\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{8}\,\,\dot{\text{a}}\,\,\text{a}\,\,\text{C1}\,\,\text{c2}^{2}\,\,\text{e}^{-\frac{3\,\dot{\text{i}}\,\,t}{2}}\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{8}\,\,\dot{\text{c1}}\,\,\text{c2}^{2}\,\,\text{e}^{-\frac{3\,\dot{\text{i}}\,\,t}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{8}\,\,\dot{\text{c1}}\,\,\text{c2}^{2}\,\,\text{e}^{-\frac{3\,\dot{\text{i}}\,\,t}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{8}\,\,\dot{\text{c1}}\,\,\text{c2}^{2}\,\,\text{c2}^$ $\frac{1}{8} \text{ a c1}^2 \text{ C2 } \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ i a c1 c2 C2 } \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ a c2}^2 \text{ C2 } \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{8} \text{ e}^{-\frac{3 \text{ i t}}{2}} \text{ e}^{-\frac{$ $\frac{1}{4}$ i a c1 d1 D1 $e^{-\frac{3it}{2}}$ Sin $\left[\frac{t}{2}\right]$ + $\frac{1}{4}$ a c2 d1 D1 $e^{-\frac{3it}{2}}$ Sin $\left[\frac{t}{2}\right]$ + $\frac{1}{4}$ a c1 D1 d2 $e^{-\frac{3it}{2}}$ Sin $\left[\frac{t}{2}\right]$ -

 $\frac{1}{4} \text{ i a c1 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{4} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c1 C1 c2 } e^{\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ a c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ A c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ A c2 d2 D2 } e^{-\frac{3 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{2}$ $\frac{1}{2}\,\,\text{i}\,\,\text{a C1 c2}^2\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\text{a c1}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{a c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\,\text{c2}^2\,\,\text{C2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{Sin}\!\left[\frac{t}{2}\,\,\text{c2}\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{c2}^2\,\,\text{$ $\frac{1}{2} \text{ a c2 d1 D1 } e^{\frac{3 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{2} \text{ a c1 D1 d2 } e^{\frac{3 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \text{ i a c2 D1 d2 } e^{\frac{3 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] +$ $\frac{1}{2} \text{ a c1 d1 D2 } \text{ e}^{\frac{3 \text{ i} \text{ t}}{2}} \text{ Sin}\Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ a c2 d2 D2 } \text{ e}^{\frac{3 \text{ i} \text{ t}}{2}} \text{ Sin}\Big[\frac{\text{t}}{2}\Big] + \frac{1}{8} \text{ i a c1}^2 \text{ C1 } \text{ e}^{\frac{5 \text{ i} \text{ t}}{2}} \text{ Sin}\Big[\frac{\text{t}}{2}\Big] - \frac{1}{8} \text{ c1} \text{ c2 d2 D2 } \text{ c3} \text{ c4} \text{ c$ $\frac{1}{4} \text{ a c1 C1 c2 } e^{\frac{5 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \text{ i a C1 c2}^2 e^{\frac{5 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \text{ a c1}^2 \text{ C2 } e^{\frac{5 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \text{ c1}^2 \text{ C2 } e^{\frac{5 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \text{ c1}^2 \text{ C2 } e^{\frac{5 \text{ i} t}{2}} \text{ Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \text{ c1}^2 \text{ C2 } e^{\frac{5 \text{ i} t}{2}} \text{ C3 } e^{\frac{5 \text{ i} t}{2}} \text{ C4 } e^{\frac$ $\frac{1}{4} \pm a \, \text{c1 c2 C2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, a \, \text{c2}^2 \, \text{C2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, - \, \frac{1}{4} \pm a \, \text{c1 d1 D1} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{Sin} \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, \text{e}^{\frac{5 \pm t}{2}} \, + \, \frac{1}{8} \, + \, \frac{1}{8} \, + \, \frac{1}{8} \, + \, \frac{1}{$ $\frac{1}{4} \text{ a c2 d1 D1 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c1 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ i a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \text{ a c2 D1 d2 } e^{\frac{5 \text{ i t}}{2}} \text{ Sin} \left[\frac{t}{2}\right$ $\frac{1}{4} \text{ a c1 d1 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, + \, \frac{1}{4} \, \, \text{i} \, \, \text{a c2 d1 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, + \, \frac{1}{4} \, \, \text{i} \, \, \text{a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \, \text{in a c1 d2 D2 } e^{\frac{5 \, \mathrm{i} \, t}{2}} \, \, \text{Sin} \left[\, \frac{t}{2} \, \right] \, - \, \frac{1}{4} \, \frac{1}{4} \, \,$ $\frac{1}{4} \text{ a c2 d2 D2 } e^{\frac{5 \text{ i} \text{ t}}{2}} \text{ Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{4} \text{ C2 d1}^2 e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] - \frac{1}{2} \text{ C1 d1 d2 } e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C1 d2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C1 d2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ G Sin} \Big[\frac{\text{t}}{2}\Big] + \frac{1}{2} \text{ C2 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ C3 d2} e^{-\frac{\text{i} \text{ t}}{2}} \text{ C4 d2}$ $\frac{1}{2} \pm \text{C1 d2}^2 \, \text{e}^{-\frac{\text{i}\,t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2}\right] + \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\frac{\text{i}\,t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \pm \text{C1 d1}^2 \, \text{e}^{-\frac{3\,\text{i}\,t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \, \text{C1 d2}^2 \, \text{e}^{-\frac{3\,\text{i}\,t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \, \text{C1 d2}^2 \, \text{e}^{-\frac{3\,\text{i}\,t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2}\right] - \frac{1}{8} \, \text{C1 d2}^2 \, \text{C2 d2}^2 \, \text{C3 d2$ $\frac{2}{8} \text{ C2 d1}^2 \text{ e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] - \frac{1}{4} \text{ C1 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ Sin} \left[\frac{\text{t}}{2}\right] + \frac{1}{4} \, \text{ i} \, \text{ C2 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{ C3 d1 d2 e}^{-\frac{3 \text{ i} \, \text{t}}{2}} \text{ G} \text{$ $\frac{1}{8} \pm C1 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, - \, \frac{1}{4} \, C2 \, d1^2 \, e^{\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{2}} \, G \, Sin \Big[\frac{t}{2}\Big] \, + \, \frac{1}{8} \, C2 \, d2^2 \, e^{-\frac{3 \pm t}{$ $\frac{1}{2}\,\text{C1}\,\text{d1}\,\text{d2}\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\text{G}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{2}\,\,\text{i}\,\,\text{C1}\,\text{d2}^2\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\text{G}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\frac{1}{4}\,\text{C2}\,\text{d2}^2\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\text{G}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{2}\,\,\text{d2}^2\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{G}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{2}\,\,\text{d2}^2\,\,\text{e}^{\frac{3\,\text{i}\,\text{t}}{2}}\,\,\text{G}\,\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{2}\,\,\text{d2}^2\,\,\text$ $\frac{1}{8} \pm \text{C1 d1}^2 \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{8} \, \text{C2 d1}^2 \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{Sin} \left[\frac{t}{2} \right] - \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\frac{5 \pm t}{2}} \, \text{G} \, \text{C1 d2} \, \text{C2 d2} \, \text{C1 d2} \, \text{C2 d2} \,$ $\frac{1}{4} \pm \text{C2 d1 d2} \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ -\frac{1}{8} \pm \text{C1 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ +\frac{1}{8} \\ \text{C2 d2}^2 \\ \text{e}^{\frac{5 \pm t}{2}} \\ \text{G Sin} \\ \left[\frac{t}{2}\right] \\ \text{C3 d2}^2 \\ \text{C4 d2}^2 \\ \text{C5 d2}^2 \\ \text{C5 d2}^2 \\ \text{C5 d2}^2 \\ \text{C6 d2}^2$ $\frac{1}{2} \operatorname{ac1}^{2} \operatorname{C1} e^{\frac{i \cdot t}{2}} \operatorname{t} \operatorname{Sin} \left[\frac{t}{2}\right] + i \operatorname{ac1} \operatorname{C1} \operatorname{c2} e^{\frac{i \cdot t}{2}} \operatorname{t} \operatorname{Sin} \left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{ac1} \operatorname{c2}^{2} e^{\frac{i \cdot t}{2}} \operatorname{t} \operatorname{Sin} \left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{ac1} \operatorname{c2}^{2} e^{\frac{i \cdot t}{2}} \operatorname{t} \operatorname{Sin} \left[\frac{t}{2}\right] - \frac{1}{2} \operatorname{ac1} \operatorname{c2}^{2} e^{\frac{i \cdot t}{2}} \operatorname{c2}^{2} e^{\frac{i \cdot t}{2$ $\frac{1}{2}\,\,\dot{\mathbb{1}}\,\,\mathsf{a}\,\,\mathsf{c1}^2\,\mathsf{C2}\,\,\mathrm{e}^{\frac{\mathrm{i}\,\,t}{2}}\,\mathsf{t}\,\,\mathsf{Sin}\big[\frac{\mathsf{t}}{2}\big]\,+\,\mathsf{a}\,\,\mathsf{c1}\,\,\mathsf{c2}\,\,\mathsf{C2}\,\,\mathrm{e}^{\frac{\mathrm{i}\,\,t}{2}}\,\mathsf{t}\,\,\mathsf{Sin}\big[\frac{\mathsf{t}}{2}\big]\,+\,\frac{1}{2}\,\,\dot{\mathbb{1}}\,\,\mathsf{a}\,\,\mathsf{c2}^2\,\,\mathsf{C2}\,\,\mathrm{e}^{\frac{\mathrm{i}\,\,t}{2}}\,\mathsf{t}\,\,\mathsf{Sin}\big[\frac{\mathsf{t}}{2}\big]\,-\,\frac{\mathsf{t}}{2}\,\,\mathsf{c2}$ a c1 d1 D1 $e^{\frac{i\,t}{2}}$ t $Sin\left[\frac{t}{2}\right]$ - i a c2 d1 D1 $e^{\frac{i\,t}{2}}$ t $Sin\left[\frac{t}{2}\right]$ - i a c1 D1 d2 $e^{\frac{i\,t}{2}}$ t $Sin\left[\frac{t}{2}\right]$ + a c2 D1 d2 $e^{\frac{it}{2}}$ t $Sin\left[\frac{t}{2}\right]$ + i a c1 d1 D2 $e^{\frac{it}{2}}$ t $Sin\left[\frac{t}{2}\right]$ - a c2 d1 D2 $e^{\frac{it}{2}}$ t $Sin\left[\frac{t}{2}\right]$ a c1 d2 D2 $e^{\frac{it}{2}}$ t $Sin\left[\frac{t}{2}\right]$ - i a c2 d2 D2 $e^{\frac{it}{2}}$ t $Sin\left[\frac{t}{2}\right]$ + $\frac{1}{2}$ C1 d1² $e^{\frac{it}{2}}$ G t $Sin\left[\frac{t}{2}\right]$ - $\frac{1}{2} \pm C2 \, d1^2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, + \pm C1 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, + C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, + C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \, d1 \, d2 \, e^{\frac{i\,t}{2}} \, G \, t \, Sin\Big[\frac{t}{2}\Big] \, - C2 \,$ $\frac{1}{2}\,\text{C1}\,\text{d2}^2\,\text{e}^{\frac{i\,t}{2}}\,\text{G}\,\text{t}\,\text{Sin}\!\left[\frac{t}{2}\right]\,+\,\frac{1}{2}\,\,\text{i}\,\,\text{C2}\,\text{d2}^2\,\,\text{e}^{\frac{i\,t}{2}}\,\text{G}\,\text{t}\,\text{Sin}\!\left[\frac{t}{2}\right]\,-\,\text{e}^{\frac{i\,t}{2}}\,\text{C}\left[\,2\,\right]\,\,\text{Sin}\!\left[\,\frac{t}{2}\right]$

In[*]:= Collect[%173, s]

 $Out[\bullet] = -2 i + 2 i x^2 - 4 i y + 2 i y^2$

 $ln[*]:= dz2trunc := \left(\frac{1}{2} i c1 e^{it} - \frac{1}{2} c2 e^{it}\right) s +$ $s^3 \left(-\frac{1}{2} \pm a c1^2 C1 + \frac{1}{4} a c1 C1 c2 - \frac{3}{2} \pm a C1 c2^2 - \frac{3}{2} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{1}{2} a c2^2 C2 + \frac{1}{2} a c1 c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2^2 C2 + \frac{1}{2} a c1 c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2}$ $\frac{1}{1}$ \pm a c1 d1 D1 - $\frac{1}{4}$ a c2 d1 D1 - $\frac{1}{4}$ a c1 D1 d2 + $\frac{3}{4}$ \pm a c2 D1 d2 + $\frac{3}{4}$ a c1 d1 D2 - $\frac{1}{4}$ \pm a c2 d1 D2 - $\frac{1}{4}$ i a c1 d2 D2 + $\frac{1}{4}$ a c2 d2 D2 + $\frac{1}{2}$ ii a c1² C1 e^{-i t} + $\frac{1}{4}$ a c1 C1 c2 e^{-i t} - $\frac{1}{2}$ ii a C1 c2² e^{-i t} + $\frac{1}{9}$ a c1² C2 e^{-i t} - $\frac{1}{4}$ i a c1 c2 C2 e^{-i t} - $\frac{1}{9}$ a c2² C2 e^{-i t} - $\frac{1}{4}$ i a c1 d1 D1 e^{-i t} - $\frac{1}{4} \text{ a c2 d1 D1 } \text{ e}^{-\text{i} \cdot \text{t}} - \frac{1}{4} \text{ a c1 D1 d2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ i a c2 D1 d2 } \text{ e}^{-\text{i} \cdot \text{t}} - \frac{1}{4} \text{ a c1 d1 D2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ c1 d2 d2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ c2 d2 d2 d2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ c2 d2 d2 d2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ c2 d2 d2 d2 } \text{ e}^{-\text{i} \cdot \text{t}} + \frac{1}{4} \text{ c2 d2 d2 d2 } \text{ c2 d2 d2 d2 d2 } \text{ c2 d2 d2 d2 } \text{ c2 d2 d2 d2 } \text{ c2 d2 d2 d2 } \text{ c2 d2 d2 }$ $\frac{1}{4}$ i a c2 d1 D2 $e^{-it} + \frac{1}{4}$ i a c1 d2 D2 $e^{-it} + \frac{1}{4}$ a c2 d2 D2 $e^{-it} - \frac{5}{9}$ i a c1² C1 $e^{it} + \frac{1}{4}$ $\frac{3}{4}$ a c1 C1 c2 e^{it} + $\frac{1}{2}$ i a C1 c2² e^{it} - $\frac{1}{2}$ a c1² C2 e^{it} - $\frac{3}{4}$ i a c1 c2 C2 e^{it} + $\frac{5}{2}$ a c2² C2 e^{it} + $\frac{5}{1}$ i a c1 d1 D1 e^{it} - $\frac{3}{1}$ a c2 d1 D1 e^{it} - $\frac{3}{1}$ a c1 D1 d2 e^{it} - $\frac{1}{1}$ i a c2 D1 d2 e^{it} + $\frac{1}{4}$ a c1 d1 D2 e^{it} + $\frac{3}{4}$ i a c2 d1 D2 e^{it} + $\frac{3}{4}$ i a c1 d2 D2 e^{it} - $\frac{5}{4}$ a c2 d2 D2 e^{it} - $\frac{3}{9} \pm a c1^{2} C1 e^{2 \pm t} + \frac{3}{4} a c1 C1 c2 e^{2 \pm t} + \frac{3}{9} \pm a C1 c2^{2} e^{2 \pm t} + \frac{3}{9} a c1^{2} C2 e^{2$ $\frac{3}{4}$ i a c1 c2 C2 e^{2it} - $\frac{3}{6}$ a c2² C2 e^{2it} + $\frac{3}{4}$ i a c1 d1 D1 e^{2it} - $\frac{3}{4}$ a c2 d1 D1 e^{2it} - $\frac{3}{2} = 100 + 100 + 100 =$ $\frac{3}{4}$ i a c1 d2 D2 $e^{2 i t}$ + $\frac{3}{4}$ a c2 d2 D2 $e^{2 i t}$ - $\frac{1}{9}$ i C1 d1² G - $\frac{3}{9}$ C2 d1² G + $\frac{1}{4}$ C1 d1 d2 G + $\frac{1}{4} \pm C2 d1 d2 G - \frac{3}{9} \pm C1 d2^2 G - \frac{1}{9} C2 d2^2 G + \frac{1}{9} \pm C1 d1^2 e^{-\frac{1}{9} \pm} G + \frac{1}{9} C2 d1^2 e^{-\frac{1}{9} \pm} G +$ $\frac{1}{4} \text{ C1 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{4} i \text{ C2 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{2} i \text{ C1 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{2} \text{ C2 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{2} e^{-i \cdot t$ $\frac{5}{8}$ i C1 d1² e^{i t} G - $\frac{1}{8}$ C2 d1² e^{i t} G + $\frac{3}{4}$ C1 d1 d2 e^{i t} G - $\frac{3}{4}$ i C2 d1 d2 e^{i t} G + $\frac{1}{9} \pm C1 \, d2^2 \, e^{\pm t} \, G + \frac{5}{9} \, C2 \, d2^2 \, e^{\pm t} \, G - \frac{3}{9} \pm C1 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{9} \, C2 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{9} \, C1 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{3}{9} \,$ $\frac{3}{4} \pm C2 d1 d2 e^{2 \pm t} G + \frac{3}{2} \pm C1 d2^{2} e^{2 \pm t} G - \frac{3}{2} C2 d2^{2} e^{2 \pm t} G - \frac{p23}{2} + \frac{\pm z23}{2}$

In[*]:= ClearAll[dz2trunc]

 $ln[*]:= dz2trunc := \left(\frac{1}{2} i c1 e^{it} - \frac{1}{2} c2 e^{it}\right) s +$ $s^3 \left(-\frac{1}{2} \pm a c1^2 C1 + \frac{1}{4} a c1 C1 c2 - \frac{3}{2} \pm a C1 c2^2 - \frac{3}{2} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{1}{2} a c2^2 C2 + \frac{1}{2} a c1 c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2^2 C2 + \frac{1}{2} a c1 c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2} a c1 c2 C2 - \frac{1}{2} a c2 C2 + \frac{1}{2}$ $\frac{1}{1}$ \pm a c1 d1 D1 - $\frac{1}{4}$ a c2 d1 D1 - $\frac{1}{4}$ a c1 D1 d2 + $\frac{3}{4}$ \pm a c2 D1 d2 + $\frac{3}{4}$ a c1 d1 D2 - $\frac{1}{4}$ \pm a c2 d1 D2 - $\frac{1}{4}$ i a c1 d2 D2 + $\frac{1}{4}$ a c2 d2 D2 + $\frac{1}{2}$ i a c1² C1 e^{-it} + $\frac{1}{4}$ a c1 C1 c2 e^{-it} - $\frac{1}{2}$ i a C1 c2² e^{-it} + $\frac{1}{9}$ a c1² C2 e^{-i t} - $\frac{1}{4}$ i a c1 c2 C2 e^{-i t} - $\frac{1}{9}$ a c2² C2 e^{-i t} - $\frac{1}{4}$ i a c1 d1 D1 e^{-i t} - $\frac{1}{4}$ a c2 d1 D1 $e^{-i.t}$ - $\frac{1}{4}$ a c1 D1 d2 $e^{-i.t}$ + $\frac{1}{4}$ i a c2 D1 d2 $e^{-i.t}$ - $\frac{1}{4}$ a c1 d1 D2 $e^{-i.t}$ + $\frac{1}{4}$ i a c2 d1 D2 $e^{-it} + \frac{1}{4}$ i a c1 d2 D2 $e^{-it} + \frac{1}{4}$ a c2 d2 D2 $e^{-it} - \frac{5}{9}$ i a c1² C1 $e^{it} + \frac{1}{4}$ $\frac{3}{4}$ a c1 C1 c2 e^{it} + $\frac{1}{2}$ i a C1 c2² e^{it} - $\frac{1}{2}$ a c1² C2 e^{it} - $\frac{3}{4}$ i a c1 c2 C2 e^{it} + $\frac{5}{2}$ a c2² C2 e^{it} + $\frac{5}{4}$ i a c1 d1 D1 e^{it} - $\frac{3}{4}$ a c2 d1 D1 e^{it} - $\frac{3}{4}$ a c1 D1 d2 e^{it} - $\frac{1}{4}$ i a c2 D1 d2 e^{it} + $\frac{1}{4}$ a c1 d1 D2 e^{it} + $\frac{3}{4}$ i a c2 d1 D2 e^{it} + $\frac{3}{4}$ i a c1 d2 D2 e^{it} - $\frac{5}{4}$ a c2 d2 D2 e^{it} - $\frac{3}{9} \pm a c1^{2} C1 e^{2 \pm t} + \frac{3}{4} a c1 C1 c2 e^{2 \pm t} + \frac{3}{9} \pm a C1 c2^{2} e^{2 \pm t} + \frac{3}{9} a c1^{2} C2 e^{2$ $\frac{3}{4}$ i a c1 c2 C2 e^{2it} - $\frac{3}{6}$ a c2² C2 e^{2it} + $\frac{3}{4}$ i a c1 d1 D1 e^{2it} - $\frac{3}{4}$ a c2 d1 D1 e^{2it} - $\frac{3}{4}$ a c1 D1 d2 e^{2it} - $\frac{3}{4}$ i a c2 D1 d2 e^{2it} - $\frac{3}{4}$ a c1 d1 D2 e^{2it} - $\frac{3}{4}$ i a c2 d1 D2 e^{2it} - $\frac{3}{4}$ i a c1 d2 D2 $e^{2 i t}$ + $\frac{3}{4}$ a c2 d2 D2 $e^{2 i t}$ - $\frac{1}{9}$ i C1 d1² G - $\frac{3}{9}$ C2 d1² G + $\frac{1}{4}$ C1 d1 d2 G + $\frac{1}{4} \pm C2 d1 d2 G - \frac{3}{9} \pm C1 d2^2 G - \frac{1}{9} C2 d2^2 G + \frac{1}{9} \pm C1 d1^2 e^{-\frac{1}{9} \pm} G + \frac{1}{9} C2 d1^2 e^{-\frac{1}{9} \pm} G +$ $\frac{1}{4} C1 d1 d2 e^{-i t} G - \frac{1}{4} i C2 d1 d2 e^{-i t} G - \frac{1}{2} i C1 d2^{2} e^{-i t} G - \frac{1}{2} C2 d2^{2} e^{-i t}$ $\frac{5}{8}$ i C1 d1² e^{i t} G - $\frac{1}{8}$ C2 d1² e^{i t} G + $\frac{3}{4}$ C1 d1 d2 e^{i t} G - $\frac{3}{4}$ i C2 d1 d2 e^{i t} G + $\frac{1}{9} \pm C1 \, d2^2 \, e^{\pm t} \, G + \frac{5}{9} \, C2 \, d2^2 \, e^{\pm t} \, G - \frac{3}{9} \pm C1 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{9} \, C2 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{9} \, C1 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{3}{9} \,$ $\frac{3}{4} \pm C2 d1 d2 e^{2 \pm t} G + \frac{3}{2} \pm C1 d2^{2} e^{2 \pm t} G - \frac{3}{2} C2 d2^{2} e^{2 \pm t} G - \frac{p23}{2} + \frac{\pm z23}{2}$

In[*]:= ClearAll[dp2trunc]

 $ln[*]:= dp2trunc := \left(\frac{1}{2}c1e^{it} + \frac{1}{2}ic2e^{it}\right)s +$ $s^{3}\left(-\frac{1}{2} a c 1^{2} C 1-\frac{1}{4} \dot{a} a c 1 C 1 c 2-\frac{3}{2} a C 1 c 2^{2}+\frac{3}{2} \dot{a} a c 1^{2} C 2+\frac{1}{4} a c 1 c 2 C 2+\frac{1}{2} \dot{a} a c 2^{2} C 2+\frac{1}{2} a c 1^{2} C$ $\frac{1}{1}$ a c1 d1 D1 + $\frac{1}{1}$ i a c2 d1 D1 + $\frac{1}{1}$ ii a c1 D1 d2 + $\frac{3}{1}$ a c2 D1 d2 - $\frac{3}{1}$ ii a c1 d1 D2 - $\frac{1}{1}$ a c2 d1 D2 - $\frac{1}{1}$ a c1 d2 D2 - $\frac{1}{1}$ \pm a c2 d2 D2 + $\frac{3}{1}$ a c1 C1 \pm c2 \pm \pm a c1 C1 c2 \pm $\frac{3}{2}$ a C1 c2 2 e $^{-i \cdot t}$ - $\frac{3}{2}$ i a c1 2 C2 e $^{-i \cdot t}$ - $\frac{3}{2}$ a c1 c2 C2 e $^{-i \cdot t}$ + $\frac{3}{2}$ i a c2 2 C2 e $^{-i \cdot t}$ - $\frac{3}{1}$ a c1 d1 D1 $e^{-i \cdot t}$ + $\frac{3}{1}$ i a c2 d1 D1 $e^{-i \cdot t}$ + $\frac{3}{1}$ i a c1 D1 d2 $e^{-i \cdot t}$ + $\frac{3}{1}$ a c2 D1 d2 $e^{-i \cdot t}$ + $\frac{3}{1}$ i a c1 d1 D2 e^{-it} + $\frac{3}{1}$ a c2 d1 D2 e^{-it} + $\frac{3}{1}$ a c1 d2 D2 e^{-it} - $\frac{3}{1}$ i a c2 d2 D2 e^{-it} - $\frac{3}{9}$ a c1² C1 e^{it} - $\frac{5}{4}$ ii a c1 C1 c2 e^{it} + $\frac{7}{9}$ a C1 c2² e^{it} + $\frac{7}{9}$ ii a c1² C2 e^{it} - $\frac{5}{4}$ a c1 c2 C2 e^{it} - $\frac{3}{8}$ i a c2² C2 e^{it} + $\frac{3}{4}$ a c1 d1 D1 e^{it} + $\frac{5}{4}$ i a c2 d1 D1 e^{it} + $\frac{5}{4}$ i a c1 D1 d2 e^{it} - $\frac{7}{4}$ a c2 D1 d2 e^{it} - $\frac{7}{4}$ i a c1 d1 D2 e^{it} + $\frac{5}{4}$ a c2 d1 D2 e^{it} + $\frac{5}{4}$ a c1 d2 D2 e^{it} + $\frac{3}{1} \pm a + c2 + d2 + D2 + e^{\pm t} + \frac{1}{2} + a + c1^{2} + c1 + e^{2 \pm t} + \frac{1}{2} \pm a + c1 + c1 + c2 + e^{2 \pm t} + \frac{1}{2} + a + c1 + c1 + c2 + e^{2 \pm t} +$ $\frac{1}{2} \pm a c1^{2} C2 e^{2 \pm t} - \frac{1}{4} a c1 c2 C2 e^{2 \pm t} - \frac{1}{2} \pm a c2^{2} C2 e^{2 \pm t} - \frac{1}{4} a c1 d1 D1 e^{2$ $\frac{1}{4} \pm a \, c2 \, d1 \, D1 \, e^{2 \pm t} - \frac{1}{4} \pm a \, c1 \, D1 \, d2 \, e^{2 \pm t} + \frac{1}{4} \, a \, c2 \, D1 \, d2 \, e^{2 \pm t} - \frac{1}{4} \pm a \, c1 \, d1 \, D2 \, e^{2 \pm t} + \frac{1}{4} \,$ $\frac{1}{4}$ a c2 d1 D2 $e^{2it} + \frac{1}{4}$ a c1 d2 D2 $e^{2it} + \frac{1}{4}$ i a c2 d2 D2 $e^{2it} - \frac{1}{2}$ C1 d1² G + $\frac{3}{2}$ i C2 d1² G - $\frac{1}{4} \pm C1 \, d1 \, d2 \, G + \frac{1}{4} \, C2 \, d1 \, d2 \, G - \frac{3}{2} \, C1 \, d2^2 \, G + \frac{1}{2} \pm C2 \, d2^2 \, G + \frac{3}{2} \, C1 \, d1^2 \, e^{-\pm t} \, G - \frac{1}{2} \, C1 \, d1^2 \, e^{-\pm t} \, C1 \, d1^2 \,$ $\frac{3}{9} \pm C2 d1^{2} e^{-i \pm} G - \frac{3}{9} \pm C1 d1 d2 e^{-i \pm} G - \frac{3}{9} C2 d1 d2 e^{-i \pm} G - \frac{3}{9} C1 d2^{2} e^{-i \pm} G + \frac{3}{9} C1 d2^{2} e^{-i \pm}$ $\frac{3}{9} \pm C2 d2^{2} e^{-i \pm t} G - \frac{3}{9} C1 d1^{2} e^{i \pm t} G + \frac{7}{9} \pm C2 d1^{2} e^{i \pm t} G - \frac{5}{4} \pm C1 d1 d2 e^{i \pm t} G - \frac{1}{2} + \frac{1}{2} +$ $\frac{5}{4} C2 d1 d2 e^{it} G + \frac{7}{2} C1 d2^{2} e^{it} G - \frac{3}{2} i C2 d2^{2} e^{it} G + \frac{1}{2} C1 d1^{2} e^{2it} G + \frac{1}{2} i C2 d1^{2} G + \frac{1}{2} i C2 d$ $\frac{1}{4} \pm C1 \, d1 \, d2 \, e^{2 \pm t} \, G - \frac{1}{4} \, C2 \, d1 \, d2 \, e^{2 \pm t} \, G - \frac{1}{2} \, C1 \, d2^2 \, e^{2 \pm t} \, G - \frac{1}{2} \pm C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{\pm p23}{2} + \frac{z23}{2}$ In[•]:= DSolve

$$\left\{ \begin{array}{l} \left[t \right] = -\frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{l}^2 \, \mathbf{C} \, \mathbf{l} \, + \frac{1}{4} \, \mathbf{a} \, \mathbf{c} \, \mathbf{l} \, \mathbf{C} \, \mathbf{l} \, \mathbf{c} \, \mathbf{c}^2 \, - \frac{3}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{C} \, \mathbf{l}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{l} \, \mathbf{c} \, \mathbf{l} \, \mathbf{c} \, \mathbf{l} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{8} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \dot{\mathbf{n}}^2 \, + \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{d}^2 \, \mathbf{D}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \dot{\mathbf{n}}^2 \, + \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \dot{\mathbf{n}}^2 \, + \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{c}}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{c}}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, \mathbf{c}^2 \, - \frac{1}{4} \, \dot{\mathbf{c}}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, - \frac{1}{4} \, \dot{\mathbf{n}} \, - \frac{1}{4} \, \dot{\mathbf{c}}^2 \, - \frac{1}{4} \, \dot{\mathbf{n}} \, - \frac{1}{4} \, \dot{\mathbf{$$

 $\frac{1}{1}$ a c2 d1 D1 $e^{-i \cdot t}$ - $\frac{1}{1}$ a c1 D1 d2 $e^{-i \cdot t}$ + $\frac{1}{1}$ i a c2 D1 d2 $e^{-i \cdot t}$ - $\frac{1}{1}$ a c1 d1 D2 $e^{-i \cdot t}$ + $\frac{1}{4}$ i a c2 d1 D2 $e^{-i t}$ + $\frac{1}{4}$ i a c1 d2 D2 $e^{-i t}$ + $\frac{1}{4}$ a c2 d2 D2 $e^{-i t}$ - $\frac{5}{2}$ i a c1² C1 $e^{i t}$ + $\frac{3}{4}$ a c1 C1 c2 e^{it} + $\frac{1}{2}$ i a C1 c2² e^{it} - $\frac{1}{2}$ a c1² C2 e^{it} - $\frac{3}{4}$ i a c1 c2 C2 e^{it} + $\frac{5}{2}$ a c2² C2 e^{it} + $\frac{5}{4} \pm a \, c1 \, d1 \, D1 \, e^{i \, t} - \frac{3}{4} \, a \, c2 \, d1 \, D1 \, e^{i \, t} - \frac{3}{4} \, a \, c1 \, D1 \, d2 \, e^{i \, t} - \frac{1}{4} \pm a \, c2 \, D1 \, d2 \, e^{i \, t} + \frac{1}{4} \pm a \, c2 \, D1 \, d2 \, e^{i \,$ $\frac{1}{4}$ a c1 d1 D2 e^{it} + $\frac{3}{4}$ i a c2 d1 D2 e^{it} + $\frac{3}{4}$ i a c1 d2 D2 e^{it} - $\frac{5}{4}$ a c2 d2 D2 e^{it} - $\frac{3}{-}\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\mathsf{C1}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\mathsf{a}\,\,\mathsf{c1}\,\,\mathsf{C1}\,\,\mathsf{c2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{C1}\,\,\mathsf{c2}^{2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{C2}\,\,\mathsf{e}^{2\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,+\,\frac{3}{-}\,\,\mathsf{a}\,\,\mathsf{c1}^{2}\,\,\mathsf{c1$ $\frac{3}{4}$ i a c1 c2 C2 e^{2it} - $\frac{3}{2}$ a c2² C2 e^{2it} + $\frac{3}{4}$ i a c1 d1 D1 e^{2it} - $\frac{3}{4}$ a c2 d1 D1 e^{2it} - $\frac{3}{4}$ a c1 D1 d2 $e^{2it} - \frac{3}{4}$ i a c2 D1 d2 $e^{2it} - \frac{3}{4}$ a c1 d1 D2 $e^{2it} - \frac{3}{4}$ i a c2 d1 D2 $e^{2it} - \frac{3}{4}$ $\frac{3}{4} \pm a \, c1 \, d2 \, D2 \, e^{2 \pm t} + \frac{3}{4} \, a \, c2 \, d2 \, D2 \, e^{2 \pm t} - \frac{1}{6} \pm C1 \, d1^2 \, G - \frac{3}{6} \, C2 \, d1^2 \, G + \frac{1}{4} \, C1 \, d1 \, d2 \, G + \frac{1}{6} \, C1 \, d1 \, d1 \, d2 \, G + \frac{1}{6} \, C1 \, d1 \, d1 \, d2 \, G + \frac{1}{6} \, C1 \, d1 \, d1 \, d2 \, G + \frac{1}{6} \,$ $\frac{1}{4} \pm C2 \, d1 \, d2 \, G - \frac{3}{4} \pm C1 \, d2^2 \, G - \frac{1}{4} \, C2 \, d2^2 \, G + \frac{1}{4} \pm C1 \, d1^2 \, e^{-i \, t} \, G + \frac{1}{4} \, C2 \, d1^2 \, C2$ $\frac{1}{4} \text{ C1 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{4} i \text{ C2 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{2} i \text{ C1 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{2} \text{ C2 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{2} e^{-i \cdot t$ $\frac{5}{8} \pm C1 \, d1^2 \, e^{\pm t} \, G - \frac{1}{8} \, C2 \, d1^2 \, e^{\pm t} \, G + \frac{3}{4} \, C1 \, d1 \, d2 \, e^{\pm t} \, G - \frac{3}{4} \pm C2 \, d1 \, d2 \, e^{\pm t} \, G +$ $\frac{1}{9} \pm C1 \, d2^2 \, e^{\pm t} \, G + \frac{5}{9} \, C2 \, d2^2 \, e^{\pm t} \, G - \frac{3}{9} \pm C1 \, d1^2 \, e^{2\pm t} \, G + \frac{3}{9} \, C2 \, d1^2 \, e^{2\pm t} \, G + \frac{3}{9} \, C1 \, d1 \, d2 \, e^{2\pm t} \, G + \frac{3}{9} \, C1 \, d1$ $\frac{3}{4} \pm C2 d1 d2 e^{2 \pm t} G + \frac{3}{6} \pm C1 d2^{2} e^{2 \pm t} G - \frac{3}{6} C2 d2^{2} e^{2 \pm t} G - \frac{m[t]}{2} + \frac{\pm * l[t]}{2},$ $m'[t] = -\frac{1}{8} a c1^2 C1 - \frac{1}{4} i a c1 C1 c2 - \frac{3}{8} a C1 c2^2 + \frac{3}{9} i a c1^2 C2 + \frac{1}{4} a c1 c2 C2 + \frac{1}{8} a c1^2 C2 + \frac{1}{8} a$ $\frac{1}{2}$ \pm a c2 C2 + $\frac{1}{4}$ a c1 d1 D1 + $\frac{1}{4}$ \pm a c2 d1 D1 + $\frac{1}{4}$ \pm a c1 D1 d2 + $\frac{3}{4}$ a c2 D1 d2 - $\frac{3}{4}$ \pm a c1 d1 D2 - $\frac{1}{4}$ a c2 d1 D2 - $\frac{1}{4}$ a c1 d2 D2 - $\frac{1}{4}$ i a c2 d2 D2 + $\frac{3}{2}$ a c1² C1 e^{-it} - $\frac{3}{4}$ i a c1 C1 c2 e^{-it} - $\frac{3}{4}$ i a c2 d1 D1 e^{-it} + $\frac{3}{4}$ i a c1 D1 d2 e^{-it} + $\frac{3}{4}$ a c2 D1 d2 e^{-it} + $\frac{3}{4}$ i a c1 d1 D2 e^{-it} + $\frac{3}{4}$ a c2 d1 D2 $e^{-it} + \frac{3}{4}$ a c1 d2 D2 $e^{-it} - \frac{3}{4}$ i a c2 d2 D2 $e^{-it} - \frac{3}{2}$ a c1 C1 $e^{it} - \frac{3}{2}$ $\frac{5}{4} \pm a c1 C1 c2 e^{it} + \frac{7}{2} a C1 c2^{2} e^{it} + \frac{7}{2} \pm a c1^{2} C2 e^{it} - \frac{5}{4} a c1 c2 C2 e^{it} - \frac{3}{2} \pm a c2^{2} C2 e^{it} +$ $\frac{3}{4}$ a c1 d1 D1 e^{it} + $\frac{5}{4}$ i a c2 d1 D1 e^{it} + $\frac{5}{4}$ i a c1 D1 d2 e^{it} - $\frac{7}{4}$ a c2 D1 d2 e^{it} - $\frac{7}{4}$ is a c1 d1 D2 e^{it} + $\frac{5}{4}$ a c2 d1 D2 e^{it} + $\frac{5}{4}$ a c1 d2 D2 e^{it} + $\frac{3}{4}$ is a c2 d2 D2 e^{it} +

$$\begin{split} &\frac{1}{8} \text{ a c 1}^2 \text{ C 1 } \text{ e}^{2 \pm t} + \frac{1}{4} \text{ is a c 1} \text{ C 1 } \text{ C 2} \text{ e}^{2 \pm t} - \frac{1}{8} \text{ a c 1} \text{ C 2} \text{ C 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 1} \text{ C 2} \text{ C 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ a c 1} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 2} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 1} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 2} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 1} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} - \frac{1}{4} \text{ is a c 1} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 1 } \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} + \frac{1}{4} \text{ a c 2} \text{ D 2} \text{ D 2} \text{ e}^{2 \pm t} \text{ G} - \frac{1}{3} \text{ a C 2} \text{ D 2} \text{ e}^{2 \pm t} \text{ G - 3} \text{ a C 2} \text{ D 2} \text{$$

$$\begin{array}{c} 2 \text{ i } D1 \ d2 + 2 \text{ i } d1 \ D2 + 2 \ d2 \ D2 \big) + \Big(\text{ i } C1 + C2 \Big) \ \left(d1 - \text{ i } d2 \right)^2 G \Big) + \\ e^{2 \text{ i } t} \left(a \ \left(c1 + \text{ i } c2 \right) \ \left(C1 \ c2 + c1 \ \left(- \text{ i } C1 + C2 \right) + \text{ i } \left(c2 \ C2 + 2 \ d1 \ D1 + 2 \ \text{ i } D1 \ d2 + 2 \ d1 \ D2 - 2 \ d2 \ D2 \big) \right) + \Big(- \text{ i } C1 + C2 \Big) \ \left(d1 + \text{ i } d2 \right)^2 G \Big) + \\ 2 e^{\text{ i } t} \left(a \ \left(c1^2 \ C2 - 2 \ c1 \ \left(C1 \ c2 - D1 \ d2 + d1 \ D2 \right) + c2 \ \left(- 2 \ \text{ i } C1 \ c2 + c2 \ C2 + 2 \ d1 \ D1 + 4 \ d1 \ D1 \ d2 - 2 \ d2 \ D2 \right) \right) + \left(d1 + \text{ i } d2 \right) \ \left(C2 \ \left(d1 - \text{ i } d2 \right) - 2 \ C1 \ d2 \right) G \right) - \\ 2 e^{\text{ i } t} \left(a \ \left(c1^2 \ C2 - 2 \ c1 \ \left(C1 \ c2 - D1 \ d2 + d1 \ D2 \right) + c2 \ \left(2 \ \text{ i } C1 \ c2 + c2 \ C2 + 2 \ d1 \ D1 - 4 \ \text{ i } D1 \ d2 - 2 \ d2 \ D2 \right) \right) + \left(d1 - \text{ i } d2 \right) \ \left(C2 \ \left(d1 + \text{ i } d2 \right) - 2 \ C1 \ d2 \right) G \right) - \\ 4 a \ \left(c1 + \text{ i } c2 \right) \ \left(\text{ i } C1 \ c2 + c1 \ \left(C1 - \text{ i } C2 \right) + c2 \ C2 - 2 \ d1 \ D1 - 2 \ \text{ i } D1 \ d2 + 2 \ \text{ i } d1 \ D2 - 2 \ d2 \ D2 \right) \right) \\ t - 4 \left(C1 - \text{ i } C2 \right) \ \left(d1 + \text{ i } d2 \right)^2 G t \right) \ Cos \left[\frac{t}{2} \right] + e^{\frac{t}{2}} \ C \left[2 \right] \ Cos \left[\frac{t}{2} \right] + \\ \frac{1}{8} e^{\frac{t}{2}} \left(2 e^{-\text{ i } t} \left(a \ \left(c1^2 \ \left(C1 - 2 \ \text{ i } C2 \right) \right) + c2 \ \left(C1 \ c2 - 2 \ D1 \ d2 + 2 \ d1 \ D2 \right) - 2 \ c1 \ \left(c2 \ C2 + d1 \ D1 - 2 \ \text{ i } d1 \ D2 - d2 \ D2 \right) \right) + \left(-2 \ \text{ i } C2 \ d1 + C1 \ \left(d1 + \text{ i } d2 \right) \right) \left(d1 - \text{ i } d2 \right) G \right) + \\ e^{-2 \ \text{ i } t} \left(a \ \left(c1^2 \ \left(C1 - 2 \ \text{ i } C2 \right) \right) + c2 \ \left(C1 \ c2 - 2 \ D1 \ d2 + 2 \ d1 \ D2 \right) - 2 \ c1 \ \left(c2 \ C2 + d1 \ D1 + 2 \ \text{ i } d1 \ D2 - d2 \ D2 \right) \right) + \left(2 \ \text{ i } C2 \ d1 \ D1 + 2 \ \text{ i } D1 \ d2 + 2 \ d2 \ D2 \right) - \left(C1 - \text{ i } C2 \right) \left(d1 - \text{ i } d2 \right)^2 G \right) - \\ 2 e^{\text{ i } t} \left(a \ \left(c1^2 \ \left(C1 + 2 \ \text{ i } C2 \right) \right) + c2 \ \left(C1 \ c2 - 2 \ D1 \ d2 + 2 \ d1 \ D2 \right) - 2 \ c1 \ \left(c1 - \text{ i } c2 \right) \left(d1 + \text{ i } d2 \right)^2 \right) \right) + \left(2 \ \text{ i } C2 \ d1 \ D1 - 2 \ \text{ i } D1 \ d2 - 2 \ d1 \ D2 - 2 \ d1 \ D1 + 2 \ d1 \ D2 - 2 \ d1 \ D1 + 2 \ d1 \ D2 - 2 \ d1 \ D1$$

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ln[\bullet] := \frac{1}{16} e^{-\frac{3it}{2}}
                                                        (-a (c1 (-d1 D1 + i D1 d2 - (3 - 4 i) d1 D2 + (4 + 3 i) d2 D2 + 8 d1 D1 e^{it} - 4 i D1 d2 e^{it} - 16)
                                                                                                                                                     i d1 D2 e^{it} - (8 - 4 i) d2 D2 e^{it} + 8 d1 D1 e^{3it} + 12 i D1 d2 e^{3it} -
                                                                                                                                              (16 + 16 i) d1 D2 e^{3 i t} + (8 - 12 i) d2 D2 e^{3 i t} - 3 d1 D1 e^{4 i t} - 3 i D1 d2 e^{4 i t} -
                                                                                                                                              (1 + 4 i) d1 D2 e^{4 i t} + (4 - i) d2 D2 e^{4 i t} + 4 i d1 D1 e^{2 i t} t +
                                                                                                                                           8 D1 d2 e^{2it}t - (16 + 20i) d1 D2 e^{2it}t + (8 - 16i) d2 D2 e^{2it}t -
                                                                                                                                           4 c2 C2 (1 - 2 e^{it} + 2 e^{3it} + e^{4it} - 4 i e^{2it} t) + 4 i C1 c2 (-1 + e^{4it} + 4 i e^{2it} t)) +
                                                                                                              c2 (i d1 D1 + D1 d2 + (4 + 3 i) d1 D2 + (3 - 4 i) d2 D2 - 4 i d1 D1 e<sup>i t</sup> - (8 - 4 i) d1 D2 e<sup>i t</sup> +
                                                                                                                                           8 d2 D2 e^{it} + 12 i d1 D1 e^{3it} - 16 D1 d2 e^{3it} + (8 - 12 i) d1 D2 e^{3it} + 8 d2 D2 e^{3it} - 16 D1 d2 e^{3it} + 8 d2 D2 e^{3it} - 16 D1 d2 e^{3it} + 8 d2 D2 e^{3it} - 16 D1 d2 e^{3it} + 8 d2 D2 e^{3it} - 16 D1 d2 e^{3it} - 16 D1 d2 e^{3it} + 8 d2 D2 e^{3it} - 16 D1 d2
                                                                                                                                           3 \pm d1 D1 e^{4 \pm t} + 3 D1 d2 e^{4 \pm t} + (4 - \pm) d1 D2 e^{4 \pm t} + (1 + 4 \pm) d2 D2 e^{4 \pm t} +
                                                                                                                                          8 \; d1 \; D1 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; + \; \left(8 \; - \; 16 \; \dot{\mathtt{n}}\right) \; d1 \; D2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; + \; \left(16 \; + \; 4 \; \dot{\mathtt{n}}\right) \; d2 \; D2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; - \; 16 \; \dot{\mathtt{n}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; - \; 16 \; \dot{\mathtt{n}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; - \; 16 \; \dot{\mathtt{n}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; \mathsf{t} \; - \; 16 \; \dot{\mathtt{n}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; \mathsf{t}} \; + \; 12 \; \dot{\mathtt{n}} \; D1 \; d2 \; e^{2 \; \dot{\mathtt{n}} \; D
                                                                                                                                           2 i c 2 C 2 \left(-1 + e^{4 i t} - 4 i e^{2 i t} t\right) - 2 C 1 c 2 \left(1 + 2 e^{i t} - 2 e^{3 i t} + e^{4 i t} + 4 i e^{2 i t} t\right) +
                                                                                                             2~c1^{2}~\left(\text{C1}~\left(\text{1-2}~\text{e}^{\text{i}~\text{t}}+\text{2}~\text{e}^{\text{3}~\text{i}~\text{t}}+\text{e}^{\text{4}~\text{i}~\text{t}}+\text{4}~\text{i}~\text{e}^{\text{2}~\text{i}~\text{t}}~\text{t}\right)\right.\\
                                                                                                                                           C2 (-i + 4i e^{it} + 4i e^{3it} + i e^{4it} + 4e^{2it})) -
                                                                              2\,G\,\left(C1\,\left(2\,\dot{\mathtt{i}}\,d1\,d2\,\left(-1+e^{4\,\dot{\mathtt{i}}\,t}+4\,\dot{\mathtt{i}}\,e^{2\,\dot{\mathtt{i}}\,t}\,t\right)\,-d2^{2}\,\left(1+2\,e^{\dot{\mathtt{i}}\,t}-2\,e^{3\,\dot{\mathtt{i}}\,t}+e^{4\,\dot{\mathtt{i}}\,t}+4\,\dot{\mathtt{i}}\,e^{2\,\dot{\mathtt{i}}\,t}\,t\right)\,+d2^{2}\,\left(1+2\,e^{\dot{\mathtt{i}}\,t}-2\,e^{3\,\dot{\mathtt{i}}\,t}+e^{4\,\dot{\mathtt{i}}\,t}+4\,\dot{\mathtt{i}}\,e^{2\,\dot{\mathtt{i}}\,t}\,t\right)\,+d2^{2}\,\left(1+2\,e^{4\,\dot{\mathtt{i}}\,t}+2\,e^{4\,\dot{\mathtt{i}}\,t}+e^{4\,\dot{\mathtt{i}}\,t}+4\,\dot{\mathtt{i}}\,e^{2\,\dot{\mathtt{i}}\,t}\,t\right)
                                                                                                                                          d1^{2} \left(1 - 2 e^{it} + 2 e^{3it} + e^{4it} + 4 i e^{2it} t\right) \right) +
                                                                                                             \text{C2} \left(-\,\dot{\mathtt{n}}\,\,\mathsf{d2}^2\,\left(-\,\mathbf{1}\,+\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,-\,2\,\,\mathsf{d1}\,\,\mathsf{d2}\,\left(1\,-\,2\,\,e^{\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{3\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,-\,4\,\dot{\mathtt{n}}\,\,e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\,\mathsf{t}\right)\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,+\,2\,\,e^{4\,\dot{\mathtt{n}}\,\,\mathsf{t}
                                                                                                                                          d1^{2}\left(-\dot{n}+4\dot{n}\,e^{\dot{n}\,t}+4\dot{n}\,e^{3\,\dot{n}\,t}+\dot{n}\,e^{4\,\dot{n}\,t}+4\,e^{2\,\dot{n}\,t}\,t\right)\right)\right)\,Cos\left[\frac{t}{2}\right]+e^{\frac{\dot{n}\,t}{2}}\,C\,[1]\,Cos\left[\frac{t}{2}\right]-
                                                 \frac{1}{4} e^{\frac{i t}{2}} \left( \frac{1}{4} e^{-2 i t} \left( a \left( i c1 + c2 \right) \left( -2 i c1 c2 + 2 c1 \left( c1 - i c2 \right) - 2 c2 c2 - d1 D1 + c2 \right) \right) \right)
                                                                                                                                           \dot{\mathtt{n}} \ \mathsf{D1} \ \mathsf{d2} \ - \ \left(3 \ - \ 4 \ \dot{\mathtt{n}}\right) \ \mathsf{d1} \ \mathsf{D2} \ + \ \left(4 \ + \ 3 \ \dot{\mathtt{n}}\right) \ \mathsf{d2} \ \mathsf{D2}\right) \ + \ 2 \ \left(\dot{\mathtt{n}} \ \mathsf{C1} \ + \ \mathsf{C2}\right) \ \left(\mathsf{d1} \ - \ \dot{\mathtt{n}} \ \mathsf{d2}\right)^2 \ \mathsf{G}\right) \ + \ \mathsf{d2} \ \mathsf{d2} \ \mathsf{d3} \ \mathsf{d3} \ \mathsf{d3} \ \mathsf{d4} \ 
                                                                               \frac{1}{4} e^{2 \pm t} \left( a \left( c1 + \pm c2 \right) \left( 2 C1 c2 + 2 c1 \left( -\pm C1 + C2 \right) + \pm \left( 2 c2 C2 + 3 d1 D1 + 3 \pm D1 d2 + C2 \right) \right) \right)
                                                                                                                                                                         (1 + 4 i) d1 D2 - (4 - i) d2 D2) + 2 (-i C1 + C2) (d1 + i d2)^2 G +
                                                                               e^{it} (a (c1<sup>2</sup> C2 + c2 (-2 i C1 c2 + c2 C2 + i D1 d2 + 2 d1 D2 - (2 - 3 i) d2 D2) +
                                                                                                                                           c1 \left(-2 C1 c2 + i d1 \left(D1 - \left(1 - 2 i\right) D2\right) + 2 d2 D2\right)\right) +
                                                                                                               (d1 + id2) (C2 (d1 - id2) - 2 C1 d2) G) +
                                                                               e^{-it} (-a (c1<sup>2</sup> C2 + c2 (2 i C1 c2 + c2 C2 - i D1 d2 + 2 d1 D2 - (2 + 3 i) d2 D2) +
                                                                                                                                           c1 \left(-2 \text{ C1 c2} - i \text{ d1 D1} - \left(2 - i \right) \text{ d1 D2} + 2 \text{ d2 D2}\right)\right) -
                                                                                                               (d1 - id2) (C2 (d1 + id2) - 2 C1 d2) G) + (a (-2 c1<sup>2</sup> (C1 - ic2) + id2) G)
                                                                                                                                           c2 (2 C1 c2 - 2 \pm c2 C2 + \pm d1 D1 - 2 D1 d2 + (4 + 3 \pm) d1 D2 - (2 - 4 \pm) d2 D2) +
                                                                                                                                           c1 \left(-4 \pm C1 + C2 - 4 + C2 + 2 + 2 + d1 + D1 + d2 + (2 - 4 \pm) + d1 + D2 + (4 + 3 \pm) + d2 + D2\right) -
                                                                                                             2\left(C1 - i C2\right) \left(d1 + i d2\right)^{2} G\right) t \operatorname{Sin}\left[\frac{t}{2}\right] - e^{\frac{it}{2}} C[2] \operatorname{Sin}\left[\frac{t}{2}\right]
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```
Out[\circ]= \frac{1}{16} e^{-\frac{3it}{2}}
                                                                                                       \left(-\,a\,\left(c1\,\left(-\,d1\,\,D1\,+\,i\,\,D1\,\,d2\,-\,\left(3\,-\,4\,\,i\,\right)\,\,d1\,\,D2\,+\,\left(4\,+\,3\,\,i\,\right)\,\,d2\,\,D2\,+\,8\,\,d1\,\,D1\,\,e^{i\,\,t}\,-\,4\,\,i\,\,D1\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,d2\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,\,e^{i\,\,t}\,-\,16\,
                                                                                                                                                                                                                                                   i d1 D2 e^{i t} - (8 - 4 i) d2 D2 e^{i t} + 8 d1 D1 e^{3 i t} + 12 i D1 d2 e^{3 i t} -
                                                                                                                                                                                                                                      \left(16+16 \; \dot{\rm i}\,\right) \; d1 \; D2 \; e^{3 \; \dot{\rm i} \; t} + \; \left(8-12 \; \dot{\rm i}\,\right) \; d2 \; D2 \; e^{3 \; \dot{\rm i} \; t} - 3 \; d1 \; D1 \; e^{4 \; \dot{\rm i} \; t} - 3 \; \dot{\rm i} \; D1 \; d2 \; e^{4 \; \dot{\rm i} \; t} - 10 \; \dot{\rm i} \; d^{2} \; d^{2
                                                                                                                                                                                                                                      (1 + 4 i) d1 D2 e^{4 i t} + (4 - i) d2 D2 e^{4 i t} + 4 i d1 D1 e^{2 i t} t +
                                                                                                                                                                                                                                  8 \; D1 \; d2 \; e^{2 \; i \; t} \; t \; - \; \left(16 \; + \; 20 \; i \right) \; d1 \; D2 \; e^{2 \; i \; t} \; t \; + \; \left(8 \; - \; 16 \; i \right) \; d2 \; D2 \; e^{2 \; i \; t} \; t \; -
                                                                                                                                                                                                                                  4 c2 C2 \left(1-2 e^{it}+2 e^{3 it}+e^{4 it}-4 i e^{2 it} t\right)+4 i C1 c2 \left(-1+e^{4 it}+4 i e^{2 it} t\right)
                                                                                                                                                                                    \text{c2} \, \left( \, \dot{\mathbb{1}} \, \, \text{d1} \, \, \text{D1} \, + \, \text{D1} \, \, \text{d2} \, + \, \left( \, 4 \, + \, 3 \, \, \dot{\mathbb{1}} \, \right) \, \, \text{d1} \, \, \text{D2} \, + \, \left( \, 3 \, - \, 4 \, \, \dot{\mathbb{1}} \, \right) \, \, \text{d2} \, \, \text{D2} \, - \, 4 \, \, \dot{\mathbb{1}} \, \, \text{d1} \, \, \text{D1} \, \, \mathbb{e}^{\, \dot{\mathbb{1}} \, \, \mathsf{t}} \, - \, \left( \, 8 \, - \, 4 \, \, \dot{\mathbb{1}} \, \right) \, \, \text{d1} \, \, \text{D2} \, \, \mathbb{e}^{\, \dot{\mathbb{1}} \, \, \mathsf{t}} \, + \, \, \mathcal{O}(\, \dot{\mathbb{1}} \, \, 
                                                                                                                                                                                                                                  2\,\,\dot{\mathbb{1}}\,\,c2\,\,C2\,\,\left(-\,1\,+\,\,\mathbb{e}^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,4\,\,\dot{\mathbb{1}}\,\,\mathbb{e}^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,\,-\,2\,\,C1\,\,c2\,\,\left(1\,+\,2\,\,\mathbb{e}^{\dot{\mathbb{1}}\,\,t}\,-\,2\,\,\mathbb{e}^{3\,\,\dot{\mathbb{1}}\,\,t}\,+\,\,\mathbb{e}^{4\,\,\dot{\mathbb{1}}\,\,t}\,+\,4\,\,\dot{\mathbb{1}}\,\,\mathbb{e}^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,\,)\,\,+\,2\,\,C1\,\,c2\,\,\left(1\,+\,2\,\,\mathbb{e}^{\dot{\mathbb{1}}\,\,t}\,-\,2\,\,\mathbb{e}^{3\,\,\dot{\mathbb{1}}\,\,t}\,+\,\mathbb{e}^{4\,\,\dot{\mathbb{1}}\,\,t}\,+\,4\,\,\dot{\mathbb{1}}\,\,\mathbb{e}^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,\,)
                                                                                                                                                                                    2 c1^{2} (C1 (1 - 2 e^{it} + 2 e^{3it} + e^{4it} + 4 i e^{2it}) +
                                                                                                                                                                                                                                C2 (-i + 4i e^{it} + 4i e^{3it} + i e^{4it} + 4 e^{2it})) -
                                                                                                                                    2\; G\; \left(\text{C1}\; \left(\text{2}\; \dot{\text{i}}\; \text{d1}\; \text{d2}\; \left(-\text{1}+\text{e}^{\text{4}\; \dot{\text{i}}\; \text{t}}+\text{4}\; \dot{\text{i}}\; \text{e}^{\text{2}\; \dot{\text{i}}\; \text{t}}\; \text{t}\right) \right. \\ \left.-\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{i}\; \text{t}}-\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{e}^{\text{4}\; \dot{\text{i}}\; \text{t}}+\text{4}\; \dot{\text{i}}\; \text{e}^{\text{2}\; \dot{\text{i}}\; \text{t}}\; \text{t}\right) \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{i}\; \text{t}}-\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{e}^{\text{4}\; \dot{\text{i}}\; \text{t}}+\text{4}\; \dot{\text{i}}\; \text{e}^{\text{2}\; \dot{\text{i}}\; \text{t}}\; \text{t}\right) \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}-\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{e}^{\text{4}\; \dot{\text{i}}\; \text{t}}+\text{4}\; \dot{\text{i}}\; \text{e}^{\text{2}\; \dot{\text{i}}\; \text{t}}\; \text{t}\right) \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}\right) \right] \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right. \\ \left.+\text{d2}^{2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right] \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right] \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right] \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{e}}}\right) \right. \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{t}}}\right) \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{e}^{\text{3}\; \dot{\text{i}}\; \text{e}^{\text{3}\; \dot{\text{e}}}}}\right) \right. \right. \\ \left.+\text{d2}\; \left(\text{1}+\text{2}\; \text{e}^{\text{3}\; \dot{\text{e}}\; \text{e}^{\text{3}\; \dot{\text{e}}}}\right) \right. \right. \\ \left.+\text
                                                                                                                                                                                                                                  d1^{2} \left(1-2 e^{it}+2 e^{3it}+e^{4it}+4 i e^{2it}t\right)\right) +\\
                                                                                                                                                                                  \text{C2} \left(-\,\,\dot{\mathbb{1}}\,\,\text{d2}^{2}\,\,\left(-\,1\,+\,\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,4\,\,\dot{\mathbb{1}}\,\,e^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,-\,2\,\,\text{d1}\,\,\text{d2}\,\,\dot{\left(1\,-\,2\,\,e^{\dot{\mathbb{1}}\,\,t}\,+\,2\,\,e^{3\,\,\dot{\mathbb{1}}\,\,t}\,+\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,4\,\,\dot{\mathbb{1}}\,\,e^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,+\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,4\,\,\dot{\mathbb{1}}\,\,e^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,+\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,4\,\,\dot{\mathbb{1}}\,\,e^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,t\right)\,+\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb{1}}\,\,t}\,-\,e^{4\,\,\dot{\mathbb
                                                                                                                                                                                                                                  d1^{2} \left( -\,\dot{\mathbb{1}} \,+\, 4\,\,\dot{\mathbb{1}} \,\, e^{\,\dot{\mathbb{1}} \,\, t} \,+\, 4\,\,\dot{\mathbb{1}} \,\, e^{\,3\,\,\dot{\mathbb{1}} \,\, t} \,+\, \dot{\mathbb{1}} \,\, e^{\,4\,\,\dot{\mathbb{1}} \,\, t} \,+\, 4\,\, e^{\,2\,\,\dot{\mathbb{1}} \,\, t} \,\, t \right) \, \right) \, \right) \,\, Cos \left[ \, \frac{t}{2} \, \right] \,+\, e^{\,\frac{\dot{\mathbb{1}} \,\, t}{2}} \,\, C \,[\, 1\,] \,\, Cos \left[ \, \frac{t}{2} \, \right] \,-\, e^{\,\frac{\dot{\mathbb{1}} \,\, t}{2}} \,\, e^{\,3\,\,\dot{\mathbb{1}} \,\, t} \,+\, e^{\,4\,\,\dot{\mathbb{1}} \,\, t} \,\, e^{\,4\,\,\dot{\mathbb{1}} \,\, t} \,+\, e^{\,4\,\,\dot{\mathbb{1}} \,\, t} \,\, e^{\,4\,\,\dot{\mathbb{1}}
                                                                                      \frac{1}{4} e^{\frac{i t}{2}} \left( \frac{1}{4} e^{-2 i t} \left( a \left( i c1 + c2 \right) \left( -2 i C1 c2 + 2 c1 \left( C1 - i C2 \right) - 2 c2 C2 - d1 D1 + c2 \right) \right) \right)
                                                                                                                                                                                                                              (1 + 4 i) d1 D2 - (4 - i) d2 D2) + 2 (-i C1 + C2) (d1 + i d2)^2 G +
                                                                                                                                    e^{i t} \left( a \left( c1^{2} C2 + c2 \left( -2 i C1 c2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) \right) \right) + c^{i t} \left( a \left( c1^{2} C2 + c2 C2 + i D1 d2 + 2 d1 D2 - \left( 2 - 3 i \right) d2 D2 \right) \right) \right)
                                                                                                                                                                                                                                  c1 \left(-2 C1 c2 + i d1 \left(D1 - \left(1 - 2 i\right) D2\right) + 2 d2 D2\right)\right) +
                                                                                                                                                                                      (d1 + i d2) (C2 (d1 - i d2) - 2 C1 d2) G) +
                                                                                                                                    e^{-i t} \left(-a \left(c1^2 C2 + c2 \left(2 i C1 c2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - \left(2 + 3 i\right) d2 D2\right) + c^{-i t} \left(-a \left(c1^2 C2 + c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + 2 d1 D2 - c2 C2 - i D1 d2 + c2 C2 C2 - i D1 d2 - c2 C2 - i D1
                                                                                                                                                                                                                                  c1 \left(-2 C1 c2 - i d1 D1 - \left(2 - i\right) d1 D2 + 2 d2 D2\right)\right) -
                                                                                                                                                                                      (d1 - i d2) (C2 (d1 + i d2) - 2 C1 d2) G) + (a (-2 c1<sup>2</sup> (C1 - i C2) + i d2) G)
                                                                                                                                                                                                                                  c2 \left(2\ \text{C1 c2} - 2\ \text{i}\ \text{c2 C2} + \text{i}\ \text{d1 D1} - 2\ \text{D1 d2} + \left(4 + 3\ \text{i}\right)\ \text{d1 D2} - \left(2 - 4\ \text{i}\right)\ \text{d2 D2}\right) +
                                                                                                                                                                                                                                  2\left(C1-i\ C2\right)\left(d1+i\ d2\right)^{2}G\right)t\right)Sin\left[\frac{t}{2}\right]-e^{\frac{i\,t}{2}}C[2]Sin\left[\frac{t}{2}\right]
```

In[*]:= Expand[%73]

$$\begin{aligned} & \textit{Out}[*] = & -\frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c1}^2 \, \, \text{C1} + \text{a} \, \, \text{c1} \, \, \text{C1} \, \, \text{c2} + \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{C1} \, \, \text{c2}^2 - \frac{1}{2} \, \, \text{a} \, \, \text{c1}^2 \, \, \text{C2} - \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c1} \, \, \text{c2} \, \, \text{C2} + \\ & \frac{1}{2} \, \, \text{a} \, \, \text{c2}^2 \, \, \text{C2} + \frac{1}{8} \, \, \dot{\mathbb{I}} \, \, \, \text{a} \, \, \text{c1} \, \, \text{d1} \, \, \text{D1} - \frac{3}{8} \, \, \text{a} \, \, \text{c2} \, \, \text{d1} \, \, \text{D1} - \frac{3}{8} \, \, \text{a} \, \, \text{c1} \, \, \text{D1} \, \, \text{d2} - \frac{5}{8} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c2} \, \, \text{D1} \, \, \text{d2} + \\ & \left(1 + \frac{7 \, \dot{\mathbb{I}}}{8}\right) \, \text{a} \, \, \text{c1} \, \, \text{d1} \, \, \text{D2} - \left(\frac{5}{8} - \dot{\mathbb{I}}\right) \, \text{a} \, \, \text{c2} \, \, \text{d1} \, \, \text{D2} - \left(\frac{5}{8} - \dot{\mathbb{I}}\right) \, \text{a} \, \, \text{c1} \, \, \text{d2} \, \, \text{D2} - \left(1 + \frac{3 \, \dot{\mathbb{I}}}{8}\right) \, \text{a} \, \, \text{c2} \, \, \text{d2} \, \, \text{D2} - \\ & \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \, \text{C1} \, \, \, \text{d1}^2 \, \, \text{G} - \frac{1}{2} \, \, \text{C2} \, \, \text{d1}^2 \, \, \text{G} + \text{C1} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} - \dot{\mathbb{I}} \, \, \text{C2} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} + \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{C1} \, \, \, \text{d2}^2 \, \, \text{G} + \\ & \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \, \text{C1} \, \, \, \text{d2}^2 \, \, \, \text{G} + \frac{1}{2} \, \, \, \text{C2} \, \, \, \text{d2}^2 \, \, \text{G} \end{aligned}$$

Info]:= TrigReduce[%74]

In[*]:= Collect[%, t * Exp[I * t]]

$$\begin{split} \ln[*] := & -\frac{1}{2} \, \, \dot{\mathbf{n}} \, \, \mathbf{a} \, \mathbf{c} \, \mathbf{1}^2 \, \, \mathbf{C} \, \mathbf{1} + \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \, \mathbf{C} \, \mathbf{1} \, \, \mathbf{c} \, \mathbf{2} + \frac{1}{2} \, \, \dot{\mathbf{n}} \, \, \mathbf{a} \, \, \mathbf{C} \, \mathbf{1} \, \, \mathbf{c} \, \mathbf{2}^2 \, - \, \frac{1}{2} \, \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{1}^2 \, \, \mathbf{C} \, \mathbf{2} \, - \, \dot{\mathbf{n}} \, \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \, \mathbf{c} \, \mathbf{1} \, \, \mathbf{c} \, \mathbf{2} \, \, \mathbf{C} \, \mathbf{2} \, + \\ & \frac{1}{2} \, \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2}^2 \, \, \, \mathbf{C} \, \mathbf{2} \, + \, \frac{1}{8} \, \, \dot{\mathbf{n}} \, \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{1} \, \, \mathbf{d} \, \mathbf{D} \, \mathbf{1} \, - \, \frac{3}{8} \, \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \mathbf{d} \, \, \mathbf{D} \, \mathbf{1} \, - \, \frac{5}{8} \, \, \dot{\mathbf{n}} \, \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \mathbf{D} \, \mathbf{1} \, \, \, \mathbf{d} \, \mathbf{2} \, + \\ & \left(\mathbf{1} + \, \frac{7 \, \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \, \, \mathbf{c} \, \mathbf{1} \, \, \, \mathbf{d} \, \, \mathbf{D} \, \mathbf{2} \, - \, \left(\frac{5}{8} \, - \, \dot{\mathbf{n}} \right) \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \, \mathbf{d} \, \mathbf{D} \, \mathbf{D} \, - \, \left(\mathbf{1} + \, \frac{3 \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \, \mathbf{d} \, \mathbf{2} \, \, \mathbf{D} \, \mathbf{2} \, - \\ & \left(\mathbf{1} + \, \frac{7 \, \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \, \, \mathbf{c} \, \mathbf{1} \, \, \, \mathbf{d} \, \mathbf{D} \, \mathbf{2} \, - \, \left(\frac{5}{8} \, - \, \dot{\mathbf{n}} \right) \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \, \mathbf{d} \, \mathbf{D} \, \mathbf{2} \, - \, \left(\mathbf{1} + \, \frac{3 \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \, \mathbf{d} \, \mathbf{2} \, \, \mathbf{D} \, \mathbf{2} \, - \, \left(\mathbf{1} \, \, \, \frac{3 \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \, \mathbf{c} \, \mathbf{2} \, \, \, \mathbf{d} \, \mathbf{2} \, \, \, \mathbf{2} \, \, \, \mathbf{2} \, \, \mathbf{2} \, \, \mathbf{2} \, \, \mathbf{2} \, \,$$

$$\begin{aligned} \textit{Out}[*] &= & -\frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{ac} \, 1^2 \, \, \text{C1} + \text{ac} \, 1 \, \, \text{C1} \, \, \text{c2} \, + \, \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{ac} \, 1 \, \, \text{c2}^2 \, - \, \frac{1}{2} \, \, \text{ac} \, 1^2 \, \, \text{C2} \, - \, \dot{\mathbb{I}} \, \, \text{ac} \, 1 \, \, \text{c2} \, \, \text{C2} \, + \, \\ & \frac{1}{2} \, \, \text{ac} \, 2^2 \, \, \text{C2} \, + \, \frac{1}{8} \, \, \dot{\mathbb{I}} \, \, \, \text{ac} \, 1 \, \, \text{d1} \, \, \text{D1} \, - \, \frac{3}{8} \, \, \text{ac} \, 2 \, \, \text{d1} \, \, \text{D1} \, - \, \frac{3}{8} \, \, \text{ac} \, 1 \, \, \text{D1} \, \, \text{d2} \, - \, \frac{5}{8} \, \, \dot{\mathbb{I}} \, \, \text{ac} \, 2 \, \, \text{D1} \, \, \text{d2} \, + \\ & \left(1 + \frac{7 \, \dot{\mathbb{I}}}{8} \right) \, \text{ac} \, 1 \, \, \text{d1} \, \, \text{D2} \, - \, \left(\frac{5}{8} \, - \, \dot{\mathbb{I}} \right) \, \text{ac} \, 2 \, \, \text{d1} \, \, \text{D2} \, - \, \left(\frac{5}{8} \, - \, \dot{\mathbb{I}} \right) \, \text{ac} \, 2 \, \, \text{d1} \, \, \text{D2} \, - \, \left(1 + \frac{3 \, \dot{\mathbb{I}}}{8} \right) \, \text{ac} \, 2 \, \, \text{d2} \, \, \text{D2} \, - \\ & \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \, \text{C1} \, \, \text{d1}^2 \, \, \text{G} \, - \, \frac{1}{2} \, \, \text{C2} \, \, \text{d1}^2 \, \, \text{G} \, + \, \text{C1} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} \, - \, \dot{\mathbb{I}} \, \, \text{C2} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} \, + \, \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{C1} \, \, \text{d2}^2 \, \, \text{G} \, + \, \frac{1}{2} \, \, \, \text{C2} \, \, \text{d2}^2 \, \, \text{G} \end{aligned}$$

$$\begin{array}{l} \ln[\bar{x}] = & 223 \text{temp} := & -\frac{1}{2} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1}^2 \, \mathbf{C} \, \mathbf{1} + \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{C} \, \mathbf{1} \, \mathbf{c} \, \mathbf{2} + \frac{1}{2} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{C} \, \mathbf{1} \, \mathbf{c} \, \mathbf{2}^2 \, - \frac{1}{2} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1}^2 \, \mathbf{C} \, \mathbf{2} - \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{c} \, \mathbf{1} \, \mathbf{c} \, \mathbf{2} \, \mathbf{C} \, \mathbf{2} + \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{1} \, - \frac{3}{8} \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{1} \, - \frac{5}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{D} \, \mathbf{1} \, \mathbf{d} \, \mathbf{2} \, + \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{1} \, - \frac{3}{8} \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{1} \, - \frac{5}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{D} \, \mathbf{1} \, \mathbf{d} \, \mathbf{2} \, + \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{2} \, - \left(\frac{5}{8} - \dot{\mathbf{n}} \right) \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{d} \, \mathbf{1} \, \mathbf{D} \, \mathbf{2} \, - \left(\frac{5}{8} - \dot{\mathbf{n}} \right) \, \mathbf{a} \, \mathbf{c} \, \mathbf{1} \, \mathbf{d} \, \mathbf{2} \, \mathbf{D} \, \mathbf{2} \, - \left(\mathbf{1} + \frac{3 \, \dot{\mathbf{n}}}{8} \right) \, \mathbf{a} \, \mathbf{c} \, \mathbf{2} \, \mathbf{d} \, \mathbf{2} \, \mathbf{D} \, \mathbf{2} \, - \frac{1}{8} \, \dot{\mathbf{n}} \, \mathbf{1} \, \mathbf{1} \, \mathbf{1} \, \mathbf{2} \, \mathbf{3} \, \mathbf{1} \, \mathbf{$$

In[•]:= **Z21**

$$\textit{Out[*]} = -\frac{1}{2} \, \, \text{$\stackrel{:}{\text{$1$}}$} \, \, \, \text{$c2$} \, \, \text{$e^{i \, t}$} \, \, \left(-\, 1 \, + \, \text{$e^{-i \, t}$}\right) \, + \, \frac{1}{2} \, \, \text{$c1$} \, \, \text{$e^{i \, t}$} \, \, \left(1 \, + \, \text{$e^{-i \, t}$}\right)$$

$$\textit{Out[*]} = \; \frac{1}{2} \; \text{$\hat{\textbf{i}}$ $\texttt{c1}$ $e^{\text{$\hat{\textbf{i}}$}$ t} $} \; \left(-\, 1 \, + \, e^{-\text{$\hat{\textbf{i}}$}$ t} \right) \, + \, \frac{1}{2} \; \text{$\texttt{c2}$ $e^{\text{$\hat{\textbf{i}}$}$ t} } \; \left(1 \, + \, e^{-\text{$\hat{\textbf{i}}$}$ t} \right)$$

$$\textit{Out[=]=} \ -\frac{1}{2} \ \text{$\stackrel{:}{\text{$\downarrow$}}$ } \ \text{$c2$ $$e$}^{\text{$\i|$$}$ } \ \left(-1+\text{$e^{-\text{$\i|$$}$}$}^{\text{$\i|$}}\right) \ + \ \frac{1}{2} \ \text{$c1$ $$e$}^{\text{$\i|$$}$ } \ \left(1+\text{$e^{-\text{$\i|$$}$}$}^{\text{$\i|$}$}\right)$$

$$\ln[e] := \text{Expand} \left[-\frac{1}{2} \text{ is } \text{c2 } \text{e}^{\text{it}} \left(-1 + \text{e}^{-\text{it}} \right) + \frac{1}{2} \text{c1 } \text{e}^{\text{it}} \left(1 + \text{e}^{-\text{it}} \right) \right]$$

$$\textit{Out[*]} = \frac{\text{c1}}{2} - \frac{\text{i} \text{c2}}{2} + \frac{1}{2} \text{c1} \text{e}^{\text{it}} + \frac{1}{2} \text{i} \text{c2} \text{e}^{\text{it}}$$

$$\textit{Out[*]} = \frac{1}{2} \, \text{i} \, \text{c1} \, \text{e}^{\text{i} \, \text{t}} \, \left(-\, 1 \, + \, \text{e}^{-\text{i} \, \text{t}} \right) \, + \, \frac{1}{2} \, \text{c2} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 \, + \, \text{e}^{-\text{i} \, \text{t}} \right)$$

$$\ln[e] := \text{ Expand} \left[\frac{1}{2} \, \dot{\mathbf{n}} \, \, \text{c1} \, \, \dot{\mathbf{e}}^{\dot{\mathbf{n}} \, \, \dot{\mathbf{t}}} \, \, \left(-\, \mathbf{1} \, + \, \dot{\mathbf{e}}^{-\dot{\mathbf{n}} \, \, \dot{\mathbf{t}}} \right) \, + \, \frac{1}{2} \, \, \text{c2} \, \, \dot{\mathbf{e}}^{\dot{\mathbf{n}} \, \, \dot{\mathbf{t}}} \, \, \left(\mathbf{1} \, + \, \dot{\mathbf{e}}^{-\dot{\mathbf{n}} \, \, \dot{\mathbf{t}}} \right) \, \right]$$

$$\textit{Out[*]} = \ \frac{\text{ii} \ c1}{2} + \frac{c2}{2} - \frac{1}{2} \ \text{ii} \ c1 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{2} \ c2 \ \text{e}^{\text{i} \ \text{t}}$$

$$ln[\bullet]:=$$
 z21 /. t \rightarrow 0

$$Out[\circ] = c1$$

$$ln[\bullet]:= p21 /. t \rightarrow 0$$

$$Out[\bullet] = c2$$

$$ln[\cdot]:=$$
 z21 /. {c1 \rightarrow 1, c2 \rightarrow -I}

$$Out[*]= -\frac{1}{2} e^{it} \left(-1 + e^{-it}\right) + \frac{1}{2} e^{it} \left(1 + e^{-it}\right)$$

In[
$$e$$
]:= Simplify $\left[-\frac{1}{2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} e^{it} \left(1 + e^{-it} \right) \right]$

$$ln[\bullet]:= p21 /. \{c1 \rightarrow 1, c2 \rightarrow -1\}$$

$$\textit{Out[*]} = \ \frac{1}{2} \ \dot{\mathbb{1}} \ e^{\dot{\mathbb{1}} \ t} \ \left(-1 + e^{-\dot{\mathbb{1}} \ t} \right) \ - \ \frac{1}{2} \ \dot{\mathbb{1}} \ e^{\dot{\mathbb{1}} \ t} \ \left(1 + e^{-\dot{\mathbb{1}} \ t} \right)$$

$$log[a] := Simplify \left[\frac{1}{2} i e^{it} \left(-1 + e^{-it} \right) - \frac{1}{2} i e^{it} \left(1 + e^{-it} \right) \right]$$

$$ln[\cdot]:=$$
 z23temp /. {c1 \rightarrow 1, c2 \rightarrow -I}

$$\begin{aligned} \textit{Out}[*]_{=} & -2 \; \text{$\stackrel{1}{\text{$\perp$}}$ a C1 - 2 a C2 + $\frac{1}{2}$ $\stackrel{1}{\text{$\perp$}}$ a d1 D1 - a D1 d2 + $\left(2 + \frac{3 \; \text{$\frac{1}{2}$}}{2}\right)$ a d1 D2 - $\left(1 - 2 \; \text{$\frac{1}{2}$}\right)$ a d2 D2 - $\left(1 - 2 \; \text$$

$$\text{Out}[*]_{=} -2 \text{ is a C1} - 2 \text{ a C2} + \frac{1}{2} \text{ is a d1 D1} - \text{a D1 d2} + \left(2 + \frac{3 \text{ is}}{2}\right) \text{ a d1 D2} - \left(1 - 2 \text{ is}\right) \text{ a d2 D2} - \frac{1}{2} \text{ is C1 d1}^2 \text{ G} - \frac{1}{2} \text{ C2 d1}^2 \text{ G} + \text{C1 d1 d2 G} - \text{ is C2 d1 d2 G} + \frac{1}{2} \text{ is C1 d2}^2 \text{ G} + \frac{1}{2} \text{ C2 d2}^2 \text{ G}$$

$$lor_{0} = z23 \text{temp} /. \{c1 \rightarrow 1, c2 \rightarrow -I, c1 \rightarrow 1, c2 \rightarrow I\}$$

$$\textit{Out} \{*\} = -4 \ \dot{\mathbb{1}} \ a + \frac{1}{2} \ \dot{\mathbb{1}} \ a \ d1 \ D1 - a \ D1 \ d2 + \left(2 + \frac{3 \ \dot{\mathbb{1}}}{2}\right) \ a \ d1 \ D2 - \left(1 - 2 \ \dot{\mathbb{1}}\right) \ a \ d2 \ D2 - \dot{\mathbb{1}} \ d1^2 \ G + 2 \ d1 \ d2 \ G + \dot{\mathbb{1}} \ d2^2 \ G$$

$$In[\bullet] := \text{Expand} \left[\frac{1}{2} \pm \left(a \left(-8 + 2 \pm D1 \, d2 + \left(4 + 2 \pm \right) \, d2 \, D2 + d1 \, \left(D1 + \left(3 - 4 \pm \right) \, D2 \right) \right) - 2 \, \left(d1 + \pm d2 \right)^2 \, G \right) \right]$$

$$\textit{Out}[*] = -4 \; \dot{\mathbb{1}} \; \; a + \frac{1}{2} \; \dot{\mathbb{1}} \; \; a \; d1 \; D1 - a \; D1 \; d2 + \\ \left(2 + \frac{3 \; \dot{\mathbb{1}}}{2}\right) \; a \; d1 \; D2 - \\ \left(1 - 2 \; \dot{\mathbb{1}}\right) \; \; a \; d2 \; D2 - \\ \dot{\mathbb{1}} \; \; d1^2 \; G + 2 \; d1 \; d2 \; G + \\ \dot{\mathbb{1}} \; d2^2 \; G + 2 \; d1 \; d2 \; G + \\ \dot{\mathbb{1}} \; d2^2 \; G + 2 \; d1 \; d2 \; G + \\ \dot{\mathbb{1}} \; d2^2 \; G + 2 \; d1 \; d2 \; G + \\ \dot{\mathbb{1}} \; d2^2 \; G + \\ \dot{\mathbb{1}}$$

$$\label{eq:local_local_local_local} \mathit{ln[=]:=} \ \, \text{\%} \ \, \text{/.} \ \, \{\text{d1} \,\rightarrow\, \text{c, D1} \,\rightarrow\, \text{k, d2} \,\rightarrow\, \text{I*c, D2} \,\rightarrow\, \text{-I*k}\}$$

$$\textit{Out[$^{\scriptsize o}$]= }-4\ \dot{\mathbb{1}}\ a+\left(\frac{1}{2}-\frac{\dot{\mathbb{1}}}{2}\right)\ a\ c\ k$$

$$\begin{array}{l} \mathit{In[*]:=} \ \ \mathsf{z3st} \ \ \textit{/.} \ \ \{\mathsf{c1} \to \mathsf{1} \ , \ \mathsf{c2} \to -\mathsf{I} \ , \ \mathsf{C1} \to \mathsf{1} \ , \ \mathsf{C2} \to \mathsf{I} \ , \ \mathsf{d1} \to \mathsf{c} \ , \ \mathsf{D1} \to \mathsf{k} \ , \ \mathsf{d2} \to \mathsf{I} \star \mathsf{c} \ , \ \mathsf{D2} \to -\mathsf{I} \star \mathsf{k} \} \\ \mathit{Out[*]:=} \ \ \left(\frac{1}{2} \ \mathsf{c} \ \mathbb{e}^{\mathsf{i} \ \mathsf{t}} \ \left(-\mathsf{1} + \mathbb{e}^{-\mathsf{i} \ \mathsf{t}} \right) + \frac{1}{2} \ \mathsf{c} \ \mathbb{e}^{\mathsf{i} \ \mathsf{t}} \ \left(\mathsf{1} + \mathbb{e}^{-\mathsf{i} \ \mathsf{t}} \right) \right) \ \mathsf{s} + \mathsf{s}^3 \ \mathsf{z33} \end{array}$$

$$\begin{array}{l} \text{In[e]:= p3st /. } \{\text{c1} \rightarrow \text{1, c2} \rightarrow \text{-I, C1} \rightarrow \text{1, C2} \rightarrow \text{I, d1} \rightarrow \text{c, D1} \rightarrow \text{k, d2} \rightarrow \text{I*c, D2} \rightarrow \text{-I*k} \} \\ \text{Out[e]:= } \left(\frac{1}{2} \text{ is c } \text{e}^{\text{it}} \left(-1 + \text{e}^{-\text{it}}\right) + \frac{1}{2} \text{ is c } \text{e}^{\text{it}} \left(1 + \text{e}^{-\text{it}}\right)\right) \text{s} + \text{p33 s}^3 \end{array}$$

$$\begin{split} & \inf_{0 \neq i} \partial_{t} \left(\left(\frac{1}{2} \, \dot{\mathbf{n}} \, \, \mathbf{c} \, \, \mathbf{e}^{\dot{\mathbf{n}} \, t} \, \left(-1 + \mathbf{e}^{-\dot{\mathbf{n}} \, t} \right) + \frac{1}{2} \, \dot{\mathbf{n}} \, \mathbf{c} \, \, \mathbf{e}^{\dot{\mathbf{n}} \, t} \, \left(1 + \mathbf{e}^{-\dot{\mathbf{n}} \, t} \right) \right) \, \mathbf{s} + \mathbf{p} \mathbf{3} \mathbf{3} \, \mathbf{s}^{3} \right) \\ & \text{Out}[\bullet] = \left(\mathbf{c} - \frac{1}{2} \, \mathbf{c} \, \, \mathbf{e}^{\dot{\mathbf{i}} \, t} \, \left(-1 + \mathbf{e}^{-\dot{\mathbf{i}} \, t} \right) - \frac{1}{2} \, \mathbf{c} \, \, \mathbf{e}^{\dot{\mathbf{i}} \, t} \, \left(1 + \mathbf{e}^{-\dot{\mathbf{i}} \, t} \right) \right) \, \mathbf{s} \\ & \text{In}[\bullet] := \mathbf{p} \mathbf{3} \mathbf{s} \mathbf{t} \, / \bullet \, \mathbf{c} \, \mathbf{c} \, \mathbf{1} \, \mathbf{c} \,$$

 $ln[*]:= z33full := \frac{1}{8} a c1^2 C1 + \frac{1}{4} i a c1 C1 c2 + \frac{3}{6} a C1 c2^2 - \frac{3}{6} i a c1^2 C2 - \frac{1}{4} a c1 c2 C2 - \frac{1}{6} i a c2^2 C2 - \frac{1}{6} c1 c2 C2$ $\frac{3}{9}$ a c1 d1 D1 + $\frac{1}{9}$ \pm a c2 d1 D1 + $\frac{1}{9}$ \pm a c1 D1 d2 - $\frac{1}{9}$ a c2 D1 d2 + $\left(\frac{1}{9} + \frac{3 \pm}{4}\right)$ a c1 d1 D2 + $\left(\frac{1}{4} - \frac{3\dot{n}}{8}\right)$ a c2 d1 D2 + $\left(\frac{1}{4} - \frac{3\dot{n}}{8}\right)$ a c1 d2 D2 - $\left(\frac{5}{9} - \frac{\dot{n}}{4}\right)$ a c2 d2 D2 - $\frac{1}{10}$ a c1 d1 D1 e^{-i t} + $\frac{1}{16}$ i a c2 d1 D2 e^{-it} - $\frac{1}{16}$ i a c1 d2 D2 e^{-it} - $\frac{1}{16}$ a c2 d2 D2 e^{-it} - $\frac{1}{2}$ a c1² C1 e^{it} + $\frac{1}{4}$ is a c1 C1 c2 e^{it} - $\frac{3}{9}$ a C1 c2² e^{it} - $\frac{3}{9}$ is a c1² C2 e^{it} + $\frac{1}{4}$ a c1 c2 C2 e^{it} - $\frac{1}{9}$ is a c2² C2 e^{it} - $\frac{1}{2}$ a c1 d1 D1 e^{it} - $\frac{3}{2}$ i a c2 d1 D1 e^{it} - $\frac{3}{2}$ i a c1 D1 d2 e^{it} + $\frac{5}{2}$ a c2 D1 d2 e^{it} + $\left(\frac{3}{9} + \frac{3\dot{n}}{4}\right)$ a c1 d1 D2 $e^{it} - \left(\frac{1}{4} - \frac{\dot{n}}{9}\right)$ a c2 d1 D2 $e^{it} - \left(\frac{1}{4} - \frac{\dot{n}}{9}\right)$ a c1 d2 D2 $e^{it} + \frac{\dot{n}}{9}$ $\left(\frac{1}{c} + \frac{\dot{n}}{4}\right)$ a c2 d2 D2 $e^{it} - \frac{1}{4}$ a c1² C1 $e^{2it} - \frac{1}{2}$ i a c1 C1 c2 $e^{2it} + \frac{1}{4}$ a C1 c2² $e^{2it} - \frac{1}{4}$ $\frac{1}{4}$ i a c1² C2 e^{2 i t} + $\frac{1}{2}$ a c1 c2 C2 e^{2 i t} + $\frac{1}{4}$ i a c2² C2 e^{2 i t} - $\frac{3}{16}$ a c1 d1 D1 e^{2 i t} - $\frac{3}{16}$ is a c2 d1 D1 e^{2 i t} - $\frac{3}{16}$ is a c1 D1 d2 e^{2 i t} + $\frac{3}{16}$ a c2 D1 d2 e^{2 i t} + $\left(\frac{11}{16} + \frac{i}{2}\right)$ a c1 d1 D2 e^{2 i t} - $\left(\frac{1}{2} - \frac{11\,\dot{n}}{16}\right)$ a c2 d1 D2 $e^{2\,\dot{n}\,t} - \left(\frac{1}{2} - \frac{11\,\dot{n}}{16}\right)$ a c1 d2 D2 $e^{2\,\dot{n}\,t} - \left(\frac{11}{16} + \frac{\dot{n}}{2}\right)$ a c2 d2 D2 $e^{2\,\dot{n}\,t} + \frac{\dot{n}}{2}$ $\frac{1}{8}$ C1 d1² G - $\frac{3}{8}$ \pm C2 d1² G + $\frac{1}{4}$ \pm C1 d1 d2 G - $\frac{1}{4}$ C2 d1 d2 G + $\frac{3}{8}$ C1 d2² G - $\frac{1}{8}$ \pm C2 d2² G - $\frac{1}{9} \text{ C1 d1}^2 \text{ e}^{\text{it}} \text{ G} - \frac{3}{9} \text{ it} \text{ C2 d1}^2 \text{ e}^{\text{it}} \text{ G} + \frac{1}{4} \text{ it} \text{ C1 d1 d2 e}^{\text{it}} \text{ G} + \frac{1}{4} \text{ C2 d1 d2 e}^{\text{it}} \text{ G} - \frac{3}{9} \text{ C1 d2}^2 \text{ e}^{\text{it}} \text{ G} - \frac{3}{9} \text{ C1 d2}^2$ $\frac{1}{9} \pm C2 \, d2^2 \, e^{\pm t} \, G - \frac{1}{4} \, C1 \, d1^2 \, e^{2 \pm t} \, G - \frac{1}{4} \pm C2 \, d1^2 \, e^{2 \pm t} \, G - \frac{1}{2} \pm C1 \, d1 \, d2 \, e^{2 \pm t} \, G +$ $\frac{1}{2} C2 d1 d2 e^{2 i t} G + \frac{1}{4} C1 d2^{2} e^{2 i t} G + \frac{1}{4} i C2 d2^{2} e^{2 i t} G - \frac{3}{4} i a c1 d1 D1 t - \frac{1}{4} a c2 d1 D1 t - \frac{1}{4} a c2$ $\frac{1}{2}$ a c1 D1 d2 t - $\frac{1}{2}$ i a c2 D1 d2 t + $\frac{3}{2}$ i a c1 d1 D2 t + $\frac{1}{2}$ a c2 d1 D2 t + $\frac{1}{2}$ a c1 d2 D2 t + $\frac{1}{2}$ i a c2 d2 D2 t - $\frac{1}{2}$ i a c1² C1 e^{i t} t + a c1 C1 c2 e^{i t} t + $\frac{1}{2}$ i a C1 c2² e^{i t} t - $\frac{1}{2}$ a c1² C2 e^{i t} t i a c1 c2 C2 e^{it} t + $\frac{1}{2}$ a c2² C2 e^{it} t + $\frac{1}{2}$ i a c1 d1 D1 e^{it} t - $\frac{3}{2}$ a c2 d1 D1 e^{it} t - $\frac{3}{8}$ a c1 D1 d2 $e^{it}t - \frac{5}{8}i$ a c2 D1 d2 $e^{it}t + \left(1 + \frac{7i}{8}\right)$ a c1 d1 D2 $e^{it}t - \left(\frac{5}{8} - i\right)$ a c2 d1 D2 $e^{it}t - \frac{5}{8}$ $\left(\frac{5}{9} - \dot{\mathbf{1}}\right)$ a c1 d2 D2 $e^{\dot{\mathbf{1}}t} t - \left(1 + \frac{3\dot{\mathbf{1}}}{9}\right)$ a c2 d2 D2 $e^{\dot{\mathbf{1}}t} t - \frac{1}{2}\dot{\mathbf{1}}$ C1 d1² $e^{\dot{\mathbf{1}}t}$ G t - $\frac{1}{2}$ C2 d1² $e^{\dot{\mathbf{1}}t}$ G t + C1 d1 d2 e^{it} G t - it C2 d1 d2 e^{it} G t + $\frac{1}{2}$ it C1 d2² e^{it} G t + $\frac{1}{2}$ C2 d2² e^{it} G t

$$\{\texttt{c1} \rightarrow \texttt{1} \text{ , } \texttt{c2} \rightarrow -\texttt{I}, \texttt{ C1} \rightarrow \texttt{1}, \texttt{ C2} \rightarrow \texttt{I}, \texttt{ d1} \rightarrow \texttt{c}, \texttt{ D1} \rightarrow \texttt{k}, \texttt{ d2} \rightarrow \texttt{I} \star \texttt{c}, \texttt{ D2} \rightarrow -\texttt{I} \star \texttt{k}\}$$

$$\textit{Out}[\text{*}] = \text{ a } \text{e}^{\text{i} \text{ t}} + \left(\frac{1}{2} + \frac{\text{i}}{2}\right) \text{ a } \text{c } \text{k} + \left(\frac{3}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{c } \text{e}^{\text{i} \text{ t}} \text{ k} - 4 \text{ i } \text{ a } \text{e}^{\text{i} \text{ t}} \text{ t} + \left(\frac{1}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{c } \text{k } \text{t} + \left(\frac{1}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{c } \text{e}^{\text{i} \text{ t}} \text{ k } \text{ t}$$

$$a e^{it} + \left(\frac{1}{2} + \frac{i}{2}\right) a c k + \left(\frac{3}{2} - \frac{i}{2}\right) a c e^{it} k - 4 i a e^{it} t + \left(\frac{1}{2} - \frac{i}{2}\right) a c k t + \left(\frac{1}{2} - \frac{i}{2}\right) a c e^{it} k t$$

$$\textit{Out[*]} = \left(\frac{1}{2} + \frac{\mathbb{i}}{2}\right) a \left(c k \left(1 - \mathbb{i} t\right) - \mathbb{i} e^{\mathbb{i} t} \left(\left(1 + \mathbb{i}\right) + \left(4 - 4 \mathbb{i}\right) t + c k \left(\left(2 + \mathbb{i}\right) + t\right)\right)\right)$$

$$In[*] := \text{Expand} \left[\left(\frac{1}{2} + \frac{\dot{\mathbf{n}}}{2} \right) \text{ a } \left(c \, \mathbf{k} \, \left(1 - \dot{\mathbf{n}} \, t \right) - \dot{\mathbf{n}} \, e^{\dot{\mathbf{n}} \, t} \, \left(\left(1 + \dot{\mathbf{n}} \right) + \left(4 - 4 \, \dot{\mathbf{n}} \right) \, t + c \, \mathbf{k} \, \left(\left(2 + \dot{\mathbf{n}} \right) + t \right) \right) \right) \right]$$

$$Out[*]= \ a \ e^{i \ t} + \left(\frac{1}{2} + \frac{i}{2}\right) \ a \ c \ k + \left(\frac{3}{2} - \frac{i}{2}\right) \ a \ c \ e^{i \ t} \ k - 4 \ i \ a \ e^{i \ t} \ t + \left(\frac{1}{2} - \frac{i}{2}\right) \ a \ c \ k \ t + \left(\frac{1}{2} - \frac{i}{2}\right) \ a \ c \ e^{i \ t} \ k \ t$$

$$a e^{it} + \left(\frac{1}{2} + \frac{i}{2}\right) a c k + \left(\frac{3}{2} - \frac{i}{2}\right) a c e^{it} k - 4 i a e^{it} t + \left(\frac{1}{2} - \frac{i}{2}\right) a c k t + \left(\frac{1}{2} - \frac{i}{2}\right) a c e^{it} k t$$

$$\textit{Out}[*] = \text{ a } \text{ e}^{\text{i } \text{ t}} + \left(\frac{1}{2} + \frac{\text{i}}{2}\right) \text{ a } \text{ c } \text{k} + \left(\frac{3}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{ c } \text{e}^{\text{i } \text{ t}} \text{ k} - 4 \text{ i } \text{ a } \text{ e}^{\text{i } \text{ t}} \text{ t} + \left(\frac{1}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{ c } \text{k } \text{t} + \left(\frac{1}{2} - \frac{\text{i}}{2}\right) \text{ a } \text{ c } \text{e}^{\text{i } \text{ t}} \text{ k } \text{ t}$$

$$a e^{it} + \left(\frac{1}{2} + \frac{i}{2}\right) a c k + \left(\frac{3}{2} - \frac{i}{2}\right) a c e^{it} k - 4 i a e^{it} t + \left(\frac{1}{2} - \frac{i}{2}\right) a c k t + \left(\frac{1}{2} - \frac{i}{2}\right) a c e^{it} k t \right]$$

$$\textit{Out[*]} = \left(\frac{1}{2} + \frac{\mathbb{i}}{2}\right) a \left(c k \left(1 - \mathbb{i} t\right) - \mathbb{i} e^{\mathbb{i} t} \left(\left(1 + \mathbb{i}\right) + \left(4 - 4 \mathbb{i}\right) t + c k \left(\left(2 + \mathbb{i}\right) + t\right)\right)\right)$$

$$\ln[e] = \text{Expand} \left[\left(\frac{1}{2} + \frac{\dot{\mathbf{n}}}{2} \right) \text{a} \left(c \, \mathbf{k} \left(1 - \dot{\mathbf{n}} \, \mathbf{t} \right) - \dot{\mathbf{n}} \, e^{\dot{\mathbf{n}} \, \mathbf{t}} \, \left(\left(1 + \dot{\mathbf{n}} \right) + \left(4 - 4 \, \dot{\mathbf{n}} \right) \, \mathbf{t} + c \, \mathbf{k} \, \left(\left(2 + \dot{\mathbf{n}} \right) + \mathbf{t} \right) \right) \right) \right]$$

$$\textit{Out}[*]= \ \ \mathsf{a} \ \mathsf{e}^{\mathsf{i} \ \mathsf{t}} + \left(\frac{1}{2} + \frac{\mathsf{i}}{2}\right) \ \mathsf{a} \ \mathsf{c} \ \mathsf{k} + \left(\frac{3}{2} - \frac{\mathsf{i}}{2}\right) \ \mathsf{a} \ \mathsf{c} \ \mathsf{e}^{\mathsf{i} \ \mathsf{t}} \ \mathsf{k} - 4 \ \mathsf{i} \ \mathsf{a} \ \mathsf{e}^{\mathsf{i} \ \mathsf{t}} \ \mathsf{t} + \left(\frac{1}{2} - \frac{\mathsf{i}}{2}\right) \ \mathsf{a} \ \mathsf{c} \ \mathsf{k} \ \mathsf{t} + \left(\frac{1}{2} - \frac{\mathsf{i}}{2}\right) \ \mathsf{a} \ \mathsf{c} \ \mathsf{e}^{\mathsf{i} \ \mathsf{t}} \ \mathsf{k} \ \mathsf{t}$$

$$\textit{Out[*]} = \left(\frac{1}{2} + \frac{\dot{\mathbb{I}}}{2}\right) \, a \, c \, k \, + \, \left(\frac{1}{2} - \frac{\dot{\mathbb{I}}}{2}\right) \, a \, c \, k \, t \, + \, e^{\dot{\mathbb{I}} \, t} \, \left(a \, + \, \left(\frac{3}{2} - \frac{\dot{\mathbb{I}}}{2}\right) \, a \, c \, k \, - \, 4 \, \dot{\mathbb{I}} \, a \, t \, + \, \left(\frac{1}{2} - \frac{\dot{\mathbb{I}}}{2}\right) \, a \, c \, k \, t \, \right)$$

$$\begin{array}{l} \mathit{Im}(-) = & p_0 \; p_1 - \dot{\mathbf{i}} \; p_1 \; \left(\dot{\mathbf{i}} \; p_0 + \frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_2 \; Z_2 - z_3 \; Z_3\right) \; + \\ & \frac{1}{4} \; p_3 \; \left(B \; z_2 \; Z_2^2 + 2 \; G \; z_3 \; Z_2^2 - Z_3 - 4 \; a \; z_2 \; Z_2 \; Z_3 - 2 \; B \; z_3 \; Z_2 \; Z_3 - b \; z_2 \; Z_3^2 + 2 \; a \; z_3 \; Z_3^2\right) \; + \\ & \frac{1}{4} \; p_2 \; \left(-Z_2 + 2 \; a \; z_2 \; Z_2^2 + B \; z_3 \; Z_2^2 + 2 \; b \; z_2 \; Z_2 \; Z_3 - 4 \; a \; z_3 \; Z_2 \; Z_3 + 2 \; g \; z_2 \; Z_3^2 - b \; z_3 \; Z_3^2\right) \; + \\ & P_3 \; \left(\frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_3 + b \; z_2^2 \; Z_2 - 4 \; a \; z_2 \; z_3 \; Z_2 - B \; z_3^2 \; Z_2 + 2 \; g \; z_2^2 \; Z_3 - 2 \; b \; z_2 \; z_3 \; Z_3 + 2 \; a \; z_3^2 \; Z_3\right) \; + \\ & \frac{1}{4} \; p_3 \; \left(-1 - 2 \; B \; z_3 \; Z_2 - 2 \; b \; z_2 \; Z_3 - a \; \left(4 \; z_2 \; Z_2 - 4 \; z_3 \; Z_3\right)\right) \; + \\ & \frac{1}{4} \; p_3 \; \left(b \; z_2 \; Z_2 - 4 \; a \; z_3 \; Z_2 + 4 \; g \; z_2 \; Z_3 - b \; z_3 \; Z_3 + b \; \left(z_2 \; Z_2 - z_3 \; Z_3\right)\right) \; + \\ & \frac{1}{4} \; p_2 \; \left(\dot{b} \; z_2 \; Z_2 - 4 \; a \; z_3 \; Z_2 + 4 \; g \; z_2 \; Z_3 - b \; z_3 \; Z_3 + b \; \left(z_2 \; Z_2 - z_3 \; Z_3\right)\right) \; + \\ & \frac{1}{4} \; p_3 \; \left(\dot{B} \; z_2 \; Z_2 + 4 \; G \; z_3 \; Z_2 - 4 \; a \; z_2 \; Z_3 - B \; z_3 \; Z_3 + B \; \left(z_2 \; Z_2 - z_3 \; Z_3\right)\right) \; + \\ & \frac{1}{4} \; p_3 \; \left(\dot{B} \; z_2 \; Z_2 + 4 \; G \; z_3 \; Z_2 - 4 \; a \; z_2 \; Z_3 - B \; z_3 \; Z_3 + B \; \left(z_2 \; Z_2 - z_3 \; Z_3\right)\right) \; + \\ & \frac{1}{4} \; p_2 \; \left(-1 + 2 \; B \; z_3 \; Z_2 + 2 \; b \; z_2 \; Z_3 - a \; \left(-4 \; z_2 \; Z_2 + 4 \; z_3 \; Z_3\right)\right)\right) \\ & \mathcal{O}_{\mathcal{U}(+)=} \; p_0 \; p_1 - \dot{\mathbf{i}} \; p_1 \; \left(\dot{\mathbf{i}} \; p_0 + \frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_2 \; Z_2 - z_3 \; Z_3\right) + \\ & \frac{1}{4} \; p_2 \; \left(-4 \; a \; z_3 \; Z_2 + 4 \; g \; z_2 \; Z_3\right) \; + \frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_3 - 4 \; a \; z_2 \; Z_3 \; Z_2 + 2 \; g \; z_2^2 \; Z_3 + 2 \; a \; z_3^2 \; Z_3\right) \; + \\ & \frac{1}{4} \; p_2 \; \left(-4 \; a \; z_3 \; Z_2 + 4 \; g \; z_2 \; Z_3\right) \; + \frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_3 - 4 \; a \; z_2 \; Z_3 \; Z_3 + 2 \; a \; z_3^2 \; Z_3\right) \; + \\ & \frac{1}{4} \; \dot{\mathbf{i}} \; p_1 \; \left(-z_2 + 2 \; a \; z_2^2 \; Z_2 + 2 \; a \; z_3 \; Z_3\right) \right) \right) + P_2 \; \left(\frac{1}{4} \; p_3 \; \left(4 \; G \; z_3 \; Z_2 - 4 \; a \; z_2 \; Z_3\right) \; + 2 \; a \; z_3^2 \; Z_3\right) \; + \\ & \frac{1}{4} \; \dot{\mathbf{i}} \;$$

In[*]:= Expand[%114]

$$\begin{aligned} & \textit{Out}[*] = \ 2 \ p_0 \ p_1 - \frac{p_2 \ P_2}{4} - \frac{p_3 \ P_3}{4} - \frac{1}{4} \ \text{is} \ p_1 \ P_2 \ z_2 - \frac{1}{4} \ \text{is} \ p_1 \ P_3 \ z_3 + \frac{1}{4} \ \text{is} \ p_1 \ p_2 \ Z_2 - \frac{1}{4} \ p_1^2 \ z_2 \ Z_2 + a \ p_2 \ P_2 \ z_2 \ Z_2 - a \ p_2 \ P_3 \ z_3 \ Z_2 - \text{is} \ a \ p_1 \ P_3 \ z_2 \ Z_2 + a \ p_2 \ P_2 \ z_2 \ Z_2 - a \ p_2 \ P_3 \ z_3 \ Z_2 - \text{is} \ a \ p_1 \ P_3 \ z_2 \ z_3 \ Z_2 + \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_2^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_2^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_2^2 + \frac{1}{4} \ \text{is} \ p_1 \ p_3 \ Z_3 - a \ p_3 \ P_2 \ z_2 \ Z_3 + \\ & \ g \ p_2 \ P_3 \ z_2 \ Z_3 + \frac{1}{2} \ \text{is} \ g \ p_1 \ P_3 \ z_2^2 \ Z_3 - \frac{1}{4} \ p_1^2 \ z_3 \ Z_3 - a \ p_2 \ P_2 \ z_3 \ Z_3 + a \ p_3 \ P_3 \ z_3 \ Z_3 - \text{is} \ a \ p_1 \ P_2 \ z_2 \ Z_3 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \ z_2 \ z_3^2 - \frac{1}{2} \ \text{is} \ a \ p_1 \ p_2 \$$

ln[⊕]:= **b** := 0

Inf•]:= **B** := **0**

$$\begin{split} & m_{1} = 2 \; p_{\theta} \; p_{1} - \frac{p_{2} \; P_{2}}{4} - \frac{p_{3} \; P_{3}}{4} - \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; P_{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; P_{3} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2} - \frac{1}{4} \; p_{1} \; p_{2} \; z_{2} \; z_{2} + \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{2} \; z_{2} + \frac{1}{2} \; \dot{\mathbf{u}} \; a \; p_{1} \; P_{2} \; z_{2}^{2} \; z_{2} + \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{2}^{2} \; z_{2} + \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{2}^{2} \; z_{2} - \frac{1}{2} \; \dot{\mathbf{u}} \; a \; p_{1} \; p_{3} \; z_{3} \; z_{2} - \frac{1}{2} \; \dot{\mathbf{u}} \; a \; p_{1} \; p_{3} \; z_{3} \; z_{2} - \frac{1}{2} \; \dot{\mathbf{u}} \; a \; p_{1} \; p_{3} \; z_{3} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{2} \; \dot{\mathbf{u}} \; a \; p_{1} \; p_{3} \; z_{2}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{3} \; z_{3}^{2} \; z_{2} - \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} - \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3}^{2} \; z_{3} - \frac{1}{4} \; \dot{\mathbf{u}} \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3}^{2} \; z_{3} + \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3}^{2} \; z_{3}^{2} + \frac{1}{4} \; \dot{\mathbf{u}} \; b \; p_{1} \; p_{2} \; z_{2}^{2} \; z_{3}^{2} \; z_{3}^{2} \; z_{3}^{2} \; z_{3}^{2} \; z_{3}^{2} \; z_{3}^{2} \; z_{3$$

 $\ln[*] = -\frac{1}{2} \pm a \cdot c1^2 \cdot C1 + \frac{1}{4} a \cdot c1 \cdot C1 \cdot c2 - \frac{3}{2} \pm a \cdot C1 \cdot c2^2 - \frac{3}{2} a \cdot c1^2 \cdot C2 + \frac{1}{4} \pm a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c2^2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c2^2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 - \frac{1}{2} a \cdot c1 \cdot c2 \cdot C2 + \frac{1}{2} a \cdot c1 \cdot c2 \cdot c2 + \frac{1}{2} a \cdot c1 \cdot c2$ $\left(\frac{3}{4} + \frac{\dot{n}}{4}\right)$ a c1 d1 D2 - $\left(\frac{1}{4} + \frac{\dot{n}}{4}\right)$ a c2 d1 D2 - $\left(\frac{1}{4} + \frac{\dot{n}}{4}\right)$ a c1 d2 D2 + $\left(\frac{1}{4} + \frac{3\dot{n}}{4}\right)$ a c2 d2 D2 + $\frac{1}{2} \pm a c 1^{2} C 1 e^{-i t} + \frac{1}{4} a c 1 C 1 c 2 e^{-i t} - \frac{1}{2} \pm a C 1 c 2^{2} e^{-i t} + \frac{1}{2} a c 1^{2} C 2 e^{-i t} - \frac{1}{4} \pm a c 1 c 2 C 2 e^{-i t} - \frac{1}{4} + \frac{1}{4} a c 1 c 2 C 2 e^{-i t} - \frac{1}{4} a c 2 C 2 e^{-i t} - \frac{1}{4} a c 2 C 2 c 2 e^{-i t} - \frac{1}{4} a c 2 C 2 c 2 e^{-i t} - \frac{1}{4} a c 2 C 2 c 2 e^{-i$ $\frac{1}{2} a c2^{2} C2 e^{-i t} - \left(\frac{1}{4} + \frac{i}{4}\right) a c1 d1 D2 e^{-i t} - \left(\frac{1}{4} - \frac{i}{4}\right) a c2 d1 D2 e^{-i t} - \left(\frac{1}{4} - \frac{i}{4}\right) a c1 d2 D2 e^{-i t} +$ $\left(\frac{1}{4} + \frac{i}{4}\right)$ a c2 d2 D2 $e^{-it} - \frac{5}{2}$ i a c1² C1 $e^{it} + \frac{3}{4}$ a c1 C1 c2 $e^{it} + \frac{1}{2}$ i a C1 c2² $e^{it} - \frac{1}{2}$ a c1² C2 $e^{it} - \frac{1}{2}$ $\frac{3}{4}$ is a c1 c2 C2 $e^{it} + \frac{5}{8}$ a c2² C2 $e^{it} + \left(\frac{1}{4} + \frac{5}{4}\right)$ a c1 d1 D2 $e^{it} - \left(\frac{3}{4} - \frac{3}{4}\right)$ a c2 d1 D2 $e^{it} - \frac{3}{4}$ $\left(\frac{3}{4} - \frac{3 i}{4}\right)$ a c1 d2 D2 $e^{it} - \left(\frac{5}{4} + \frac{i}{4}\right)$ a c2 d2 D2 $e^{it} - \frac{3}{4}$ i a c1 C1 $e^{2 it} + \frac{3}{4}$ a c1 C1 c2 $e^{2 it} + \frac{3}{4}$ $\frac{3}{2} \pm a \, C1 \, c2^2 \, e^{2 \pm t} + \frac{3}{2} \, a \, c1^2 \, C2 \, e^{2 \pm t} + \frac{3}{4} \pm a \, c1 \, c - 3 \pm a \, e^{\pm t} + \pm c^2 \, e^{-\pm t} \, G + \left(1 - \pm\right) \, a \, c \, k + \frac{3}{4} \, e^{-2 \pm t} \, d + \frac{3}{4} \, e^{-2 \pm$ (1+i) a c e^{it} k + $\frac{1}{2}$ it l[t] - $\frac{m[t]}{2}$ 2 C2 e^{2it} - $\frac{3}{8}$ a c2 C2 e^{2it} - $(\frac{3}{4} - \frac{3i}{4})$ a c1 d1 D2 e^{2it} - $\left(\frac{3}{4} + \frac{3\dot{\mathbf{n}}}{4}\right)$ a c2 d1 D2 $e^{2\dot{\mathbf{n}}\dot{\mathbf{t}}} - \left(\frac{3}{4} + \frac{3\dot{\mathbf{n}}}{4}\right)$ a c1 d2 D2 $e^{2\dot{\mathbf{n}}\dot{\mathbf{t}}} + \left(\frac{3}{4} - \frac{3\dot{\mathbf{n}}}{4}\right)$ a c2 d2 D2 $e^{2\dot{\mathbf{n}}\dot{\mathbf{t}}}$ $\frac{1}{8} \pm C1 d1^2 G - \frac{3}{8} C2 d1^2 G + \frac{1}{4} C1 d1 d2 G + \frac{1}{4} \pm C2 d1 d2 G - \frac{3}{6} \pm C1 d2^2 G - \frac{1}{6} C2 d2^2 G +$ $\frac{1}{9} C2 d2^{2} e^{-i t} G - \frac{5}{9} i C1 d1^{2} e^{i t} G - \frac{1}{9} C2 d1^{2} e^{i t} G + \frac{3}{4} C1 d1 d2 e^{i t} G - \frac{3}{4} i C2 d1 d2 e^{i t} G +$ $\frac{1}{2} \pm C1 \, d2^2 \, e^{\pm t} \, G + \frac{5}{2} \, C2 \, d2^2 \, e^{\pm t} \, G - \frac{3}{2} \pm C1 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{2} \, C2 \, d1^2 \, e^{2 \pm t} \, G + \frac{3}{4} \, C1 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{3}{4} \,$ $\frac{3}{4} \pm C2 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{3}{8} \pm C1 \, d2^2 \, e^{2 \pm t} \, G - \frac{3}{8} \, C2 \, d2^2 \, e^{2 \pm t} \, G - \frac{m[t]}{3} + \frac{\pm *l[t]}{3} /.$ $\{c1 \rightarrow 1, c2 \rightarrow -I, C1 \rightarrow 1, C2 \rightarrow I, d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I*c, D2 \rightarrow -I*k\}$ Out[*]= $\frac{3 \text{ i a c}}{4} - 6 \text{ i a e}^{\text{i t}} - \frac{3}{4} \text{ i a e}^{2 \text{ i t}} + 2 \text{ i c}^{2} \text{ e}^{-\text{i t}} \text{ G} +$ $\left(2\,-\,2\,\,\dot{\mathbb{1}}\,\right)\,\,a\,c\,\,k\,+\,\,\left(2\,+\,2\,\,\dot{\mathbb{1}}\,\right)\,\,a\,c\,\,\mathfrak{E}^{\,\dot{\mathbb{1}}\,\,t}\,\,k\,+\,\,\dot{\mathbb{1}}\,\,l\,[\,t\,]\,\,-\,\,\frac{m\,[\,t\,]}{2}\,-\,\dot{\mathbb{1}}\,\,\mathfrak{E}^{2\,\,\dot{\mathbb{1}}\,\,t}\,\,m\,[\,t\,]$

$$\begin{aligned} & a_{i}(t) = -\frac{1}{8} \text{ is } \text{c1}^2 \text{ C1} + \frac{1}{4} \text{ a } \text{C1 C1 } \text{C2} - \frac{3}{8} \text{ is } \text{C1 } \text{C2}^2 - \frac{3}{8} \text{ a } \text{c1}^2 \text{C2} + \frac{1}{4} \text{ is } \text{a } \text{C1 } \text{C2} \text{C2} - \frac{1}{8} \text{ a } \text{c1}^2 \text{C2} + \frac{1}{4} \text{ is } \text{a } \text{C1 } \text{C2}^2 - \frac{1}{8} \text{ a } \text{c1}^2 \text{C2} + \frac{1}{4} \text{ is } \text{a } \text{C2}^2 \text{C2} + \frac{1}{4} \text{ is } \text{a } \text{C1 } \text{C2} \text{C2} - \frac{1}{4} + \frac{1}{4} \text{ a } \text{C1 } \text{C2} \text{C2} + \frac{1}{4} + \frac{1}{4} \text{ a } \text{C1 } \text{C2} \text{C2} \text{ e}^{-1} \text{ t} - \frac{1}{8} \text{ is } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{C1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C}^{-1} \text{ t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C2}^{-1} \text{ t} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ C2}^{-1} \text{ c}^{-1} \text{ c} + \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2}^2 \text{ C2}^{-1} \text{ c}^{-1} \text{ c}^{-1} \text{ c} + \frac{1}{4} \text{ c1} \text{ C1} \text{ C2}^{-1} \text{ c}^{-1} \text{$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} - \frac{\text{ii} \, \text{p1} \, \text{z2}}{4} + \text{a} \, \text{p2} \, \text{z2} \, \text{Z2} + \frac{1}{2} \, \text{ii} \, \text{a} \, \text{p1} \, \text{z2}^2 \, \text{Z2} + \frac{1}{2} \, \text{ii} \, \text{a} \, \text{p1} \, \text{z2}^2 \, \text{Z2} + \frac{1}{2} \, \text{ii} \, \text{a} \, \text{p1} \, \text{z2} \, \text{z3}^2 - \text{a} \, \text{p3} \, \text{z2} \, \text{Z3} - \text{a} \, \text{p2} \, \text{z3} \, \text{Z3} - \text{ii} \, \text{a} \, \text{p1} \, \text{z2} \, \text{z3} \, \text{Z3} \right)$$

$$\cos_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{i} \, \text{z2}}{4} + \text{a} \, \text{p2} \, \text{z2} \, \text{Z2} - \frac{1}{2} \, \text{ii} \, \text{a} \, \text{z2}^2 \, \text{Z2} + \frac{1}{2} \, \text{ii} \, \text{a} \, \text{z2}^2 \, \text{Z2} + \frac{1}{2} \, \text{ii} \, \text{a} \, \text{z2} \, \text{z3}^2 - \text{a} \, \text{p3} \, \text{z2} \, \text{Z3} - \text{a} \, \text{p2} \, \text{z3} \, \text{Z3} + \text{ii} \, \text{a} \, \text{z2} \, \text{z3} \, \text{Z3} \right)$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{ii} \, \text{z2}}{4} + \text{a} \, \text{p2} \, \text{z2} \, \text{z2} \, \text{z2} - \frac{1}{2} \, \text{ii} \, \text{a} \, \text{z2}^2 \, \text{Z2} + \frac{1}{2} \, \text{a} \, \text{a} \, \text{z2}^2 \, \text{Z3} + \frac{1}{2} \, \text{a} \, \text{z2}^2 \, \text{Z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{ii} \, \text{z2}}{4} + \text{a} \, \text{p2} \, \text{z2} \, \text{z2} \, \text{z2} - \text{a} \, \text{p3} \, \text{z2} \, \text{z3} - \text{a} \, \text{p2} \, \text{z3} \, \text{Z3} + \text{ii} \, \text{a} \, \text{z2} \, \text{z3} \, \text{Z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{ii} \, \text{z2}}{4} + \text{a} \, \text{p2} \, \text{z2} \, \text{z2} \, \text{z2} - \text{a} \, \text{p3} \, \text{z2} \, \text{z3} - \text{a} \, \text{p2} \, \text{z3} \, \text{z3} + \text{ii} \, \text{a} \, \text{z2} \, \text{z3} \, \text{z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{ii} \, \text{z2}}{2} + 2 \, \text{a} \, \text{p2} \, \text{z2} \, \text{z2} \, \text{z2} + 2 \, \text{a} \, \text{p3} \, \text{z2} \, \text{z3} - \text{a} \, \text{a} \, \text{p2} \, \text{z3} \, \text{z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{p2}{4} + \frac{\text{ii} \, \text{z2}}{2} + 2 \, \text{a} \, \text{z2} \, \text{z2} \, \text{z3} \, \text{z3} - 2 \, \text{a} \, \text{z2} \, \text{z3} \, \text{z3} \right) + \frac{1}{4} \, \text{p2} \, \left(-\frac{1}{4} + \frac{1}{4} \, \text{p2} \, \left(-\frac{1}{4} \, \text{z2} \, \text{z2} \, \text{z2} \, \text{z2} + 2 \, \text{a} \, \text{z2} \, \text{z3} \, \text{z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{1}{4} + \frac{1}{4} \, \text{p3} \, \left(-\frac{1}{4} \, \text{p3} \, \text{z3} \, \text{z3} + \frac{1}{4} \, \text{z3} \, \text{z3} \, \text{z3} \right) \right)$$

$$\log_{|x|=x} 2 \left(-\frac{1}{4} + \frac{1}{4} \, \text{p3} \, \left(-\frac{1}{4} \, \text{p3} \, \text{z3} \, \text{z3} \, \text{z3} + \frac{1}{4} \, \text{z3} \, \text{z3} \, \text{z3} \right) \right)$$

In[*]:= Expand[%112]

$$\begin{split} & \log_{\mathbb{R}^2} = -\frac{p^2}{2} + \frac{i}{2} \frac{z^2}{2} + 2 \operatorname{ap2} z \operatorname{Z} 2 \operatorname{Z} - \operatorname{i} \operatorname{a} z \operatorname{Z}^2 \operatorname{Z} 2 + 2 \operatorname{G} \operatorname{p} \operatorname{Z} \operatorname{Z} 3 - \operatorname{i} \operatorname{G} \operatorname{Z} 2 \operatorname{Z}^2 - 2 \operatorname{ap3} z \operatorname{Z} 3 - 2 \operatorname{ap2} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 + 2 \operatorname{i} \operatorname{a} z \operatorname{Z} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 + 2 \operatorname{i} \operatorname{a} z \operatorname{Z} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 + 2 \operatorname{i} \operatorname{a} z \operatorname{Z} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Z} 3 + 2 \operatorname{i} \operatorname{a} z \operatorname{Z} z \operatorname{Z} 3 - 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Z} 3 + 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Z} 3 + 2 \operatorname{Ap3} z \operatorname{Z} 3 - 2 \operatorname{Z} 3 + 2 \operatorname{Z} 3 - 2 \operatorname{Z} 3$$

In[*]:= Expand[%114]

$$\begin{array}{l} \textit{Out}(*) = & 2 \; p_0 \; p_1 - \frac{p_2 \; P_2}{4} - \frac{p_3 \; P_3}{4} - \frac{1}{4} \; \dot{\mathbb{1}} \; p_1 \; P_2 \; z_2 - \frac{1}{4} \; \dot{\mathbb{1}} \; p_1 \; P_3 \; z_3 + \frac{1}{4} \; \dot{\mathbb{1}} \; p_1 \; p_2 \; Z_2 - \frac{1}{4} \; p_1^2 \; z_2 \; Z_2 + a \; p_2 \; P_2 \; z_2 \; Z_2 - a \; p_2 \; P_3 \; z_3 \; Z_2 - \dot{\mathbb{1}} \; a \; p_1 \; P_3 \; z_2 \; Z_2 + a \; p_2 \; P_2 \; z_2 \; Z_2 - a \; p_2 \; P_3 \; z_3 \; Z_2 - \dot{\mathbb{1}} \; a \; p_1 \; P_3 \; z_2 \; z_3 \; Z_2 + \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_2 \; z_2 \; Z_2^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_2 \; z_2 \; Z_2^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_2^2 + \frac{1}{4} \; \dot{\mathbb{1}} \; p_1 \; p_3 \; Z_3 - a \; p_3 \; P_2 \; z_2 \; Z_3 + \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_2 \; z_2 \; Z_3^2 - \frac{1}{4} \; p_1^2 \; z_3 \; Z_3 - a \; p_2 \; P_2 \; z_3 \; Z_3 + a \; p_3 \; P_3 \; z_3 \; Z_3 - \dot{\mathbb{1}} \; a \; p_1 \; P_2 \; z_2 \; z_3 \; Z_3 + \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_2^2 \; Z_3 + \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_2 \; Z_3 + \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_2 \; Z_3 + \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3 + \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3 \; z_3 \; Z_3^2 - \frac{1}{2} \; \dot{\mathbb{1}} \; a \; p_1 \; p_3$$

In[*]:= Collect[%, s]

$$\begin{aligned} & \textit{Out}(\bullet) = \ 2 \ p_0 \ p_1 - \frac{p_2 \ P_2}{4} - \frac{p_3 \ P_3}{4} - \frac{1}{4} \ \dot{\mathbb{1}} \ p_1 \ P_2 \ z_2 - \frac{1}{4} \ \dot{\mathbb{1}} \ p_1 \ P_3 \ z_3 + \frac{1}{4} \ \dot{\mathbb{1}} \ p_1 \ p_2 \ Z_2 - \frac{1}{4} \ p_1^2 \ z_2 \ Z_2 + a \ p_2 \ P_2 \ z_2 \ Z_2 - a \ p_2 \ P_3 \ z_3 \ Z_2 - \dot{\mathbb{1}} \ a \ p_1 \ P_3 \ z_2 \ Z_2 + a \ p_2 \ P_2 \ z_2 \ Z_2 - a \ p_2 \ P_3 \ z_3 \ Z_2 - \dot{\mathbb{1}} \ a \ p_1 \ P_3 \ z_2 \ Z_3 \ Z_2 + \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ G \ p_1 \ P_2 \ z_3^2 \ Z_2 - \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_2 \ z_2 \ Z_2^2 - \frac{1}{2} \ \dot{\mathbb{1}} \ G \ p_1 \ p_3 \ z_3 \ Z_2^2 + \frac{1}{4} \ \dot{\mathbb{1}} \ p_1 \ p_3 \ Z_3 - a \ p_3 \ P_2 \ z_2 \ Z_3 + \\ & g \ p_2 \ P_3 \ z_2 \ Z_3 + \frac{1}{2} \ \dot{\mathbb{1}} \ g \ p_1 \ P_3 \ z_2^2 \ Z_3 - \frac{1}{4} \ p_1^2 \ z_3 \ Z_3 - a \ p_2 \ P_2 \ z_3 \ Z_3 + a \ p_3 \ P_3 \ z_3 \ Z_3 - \dot{\mathbb{1}} \ a \ p_1 \ P_2 \ z_2 \ z_3 \ Z_3 + \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_2 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_2 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_2 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_2 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_2 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 - \dot{\mathbb{1}} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 + \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 - \dot{\mathbb{1}} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 - \dot{\mathbb{1}} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3 - \dot{\mathbb{1}} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_2 \ z_2 \ Z_3^2 - \dot{\mathbb{1}} \ \dot{\mathbb{1}} \ a \ p_1 \ p_3 \ z_3 \ Z_3^2 \\ & \frac{1}{2} \ \dot{\mathbb{1}} \ a \ p_1 \ p_2 \ z_3 \ Z_3 + \dot{\mathbb{1}} \ \dot{\mathbb$$

$$\begin{aligned} & \text{def}_{P} = \frac{1}{8} \text{ is a } \text{C1}^2 \text{C1} + \frac{1}{4} \text{ a } \text{C1} \text{C1} \text{C2} - \frac{3}{8} \text{ is a } \text{C1} \text{C2}^2 - \frac{3}{8} \text{ a } \text{C1}^2 \text{C2} + \frac{1}{4} \text{ is a } \text{C1} \text{C2} \text{C2} - \frac{1}{8} \text{ a } \text{C2}^2 \text{C2} + \\ & \left(\frac{3}{4} + \frac{\dot{a}}{4}\right) \text{ a } \text{C1} \text{ d1} \text{ D2} - \left(\frac{1}{4} + \frac{\dot{a}}{4}\right) \text{ a } \text{C2} \text{ d1} \text{ D2} - \left(\frac{1}{4} + \frac{\dot{a}}{4}\right) \text{ a } \text{C2} \text{ d1} \text{ D2} - \left(\frac{1}{4} + \frac{\dot{a}}{4}\right) \text{ a } \text{C2} \text{ d2} \text{ D2} + \\ & \frac{1}{8} \text{ is } \text{C1}^2 \text{ C1} \text{ e}^{-\dot{a}\,t} + \frac{1}{4} \text{ a } \text{C1} \text{ C1} \text{ C2} \text{ e}^{-\dot{a}\,t} - \frac{1}{8} \text{ is } \text{C1} \text{ C2}^2 \text{ e}^{-\dot{a}\,t} + \frac{1}{8} \text{ a } \text{c1}^2 \text{ C2} \text{ e}^{-\dot{a}\,t} - \\ & \frac{1}{4} \text{ is a } \text{C1} \text{ C2} \text{ C2} \text{ e}^{-\dot{a}\,t} - \frac{1}{8} \text{ a } \text{C2}^2 \text{ C2} \text{ e}^{-\dot{a}\,t} - \left(\frac{1}{4} + \frac{\dot{a}}{4}\right) \text{ a } \text{C1} \text{ d1} \text{ D2} \text{ e}^{-\dot{a}\,t} - \left(\frac{1}{4} - \frac{\dot{a}}{4}\right) \text{ a } \text{C2} \text{ d1} \text{ D2} \text{ e}^{-\dot{a}\,t} - \frac{1}{4} \text{ a } \text{ c1} \text{ C1} \text{ C2} \text{ e}^{-\dot{a}\,t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C2} \text{ e}^{-\dot{a}\,t} - \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C2} \text{ e}^{-\dot{a}\,t} - \frac{3}{8} \text{ is a } \text{ c1}^2 \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{1}{8} \text{ a } \text{ c1}^2 \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{1}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{1}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ e}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ C2}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ C2}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2} \text{ C2}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2}^{\dot{a}\,t} + \frac{3}{8} \text{ a } \text{ c1} \text{ C2} \text{ C2$$

$$\ln[\text{e}] = \text{Simplify} \left[\left(\frac{1}{2} \, \dot{\text{i}} \, \text{c} \, e^{\dot{\text{i}} \, \text{t}} \, \left(-1 + e^{-\dot{\text{i}} \, \text{t}} \right) \, + \, \frac{1}{2} \, \dot{\text{i}} \, \text{c} \, e^{\dot{\text{i}} \, \text{t}} \, \left(1 + e^{-\dot{\text{i}} \, \text{t}} \right) \right) \, s \, + \, p33 \, s^3 \, \right]$$

Outfol= $i c s + p33 s^3$

$$\begin{array}{c} \ln[\bullet] := \ -\frac{\mathsf{p2}}{2} + \frac{\text{ii} \ z2}{2} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z2} \ \mathsf{Z2} - \mathsf{ii} \ \mathsf{a} \ \mathsf{z2}^2 \ \mathsf{Z2} + 2 \ \mathsf{G} \ \mathsf{p3} \ \mathsf{Z2} \ \mathsf{z3} - \mathsf{ii} \ \mathsf{G} \ \mathsf{Z2} \ \mathsf{z3}^2 - 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{Z3} - 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{Z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{Z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p2} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z2} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} + 2 \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{z3} + 2 \ \mathsf{p3} \ \mathsf{a} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{p3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{a} \ \mathsf{a} \ \mathsf{z3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{p3} + 2 \ \mathsf{a} \ \mathsf{p3} + 2 \ \mathsf{a} \ \mathsf{p3} \ \mathsf{p3} + 2 \ \mathsf{a} \ \mathsf{p3} + 2 \ \mathsf{p3} \ \mathsf{p3} + 2 \ \mathsf{a} \ \mathsf{p3} + 2 \ \mathsf{p3} +$$

$$\begin{aligned} & \text{Out}[*] = \ \frac{1}{2} \left(\dot{\mathbb{1}} \ e^{\dot{\mathbb{1}} \, t} \ s - p23 \ s^3 \right) + \frac{1}{2} \, \dot{\mathbb{1}} \ \left(e^{\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) + \\ & \quad 2 \ a \ \left(- \dot{\mathbb{1}} \ e^{\dot{\mathbb{1}} \, t} \ s + p23 \ s^3 \right) \ \left(e^{\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) \ \left(e^{-\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) - \\ & \quad \dot{\mathbb{1}} \ a \ \left(e^{\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right)^2 \ \left(e^{-\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) + 2 \ G \ \left(\dot{\mathbb{1}} \ c \ s + p33 \ s^3 \right) \ \left(e^{-\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) \ \left(c \ s + s^3 \ z33 \right) - \\ & \quad \dot{\mathbb{1}} \ G \ \left(e^{-\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) \ \left(c \ s + s^3 \ z33 \right)^2 - 2 \ a \ \left(\dot{\mathbb{1}} \ c \ s + p33 \ s^3 \right) \ \left(e^{\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) \ \left(k \ s + s^3 \ z33 \right) - \\ & \quad 2 \ a \ \left(- \dot{\mathbb{1}} \ e^{\dot{\mathbb{1}} \, t} \ s + p23 \ s^3 \right) \ \left(c \ s + s^3 \ z33 \right) \ \left(k \ s + s^3 \ z33 \right) + \\ & \quad 2 \ \dot{\mathbb{1}} \ a \ \left(e^{\dot{\mathbb{1}} \, t} \ s + s^3 \ z23 \right) \ \left(c \ s + s^3 \ z33 \right) \ \left(k \ s + s^3 \ z33 \right) \end{aligned}$$

Out[
$$\bullet$$
]= S (c + s² z33)

$$Out[\bullet] = s (c + s^2 z 33)$$

Outfole
$$\hat{l}$$
 C S + p33 S³

$$Out[\bullet] = i c s + p33 s^3$$

$$ln[=]:=$$
 dz2fornow := $-\frac{p2}{2} + \frac{i z^2}{2} + 2 a p^2 z^2 Z^2 - i a z^2 Z^2 + 2 G p^3 Z^2 z^3 - i G Z^2 z^3 - 2 a p^3 z^2 Z^3 - 2 a p^2 z^3 Z^3 + 2 i a z^2 z^3 Z^3$

$$\textit{Out[*]} = \left(-\frac{1}{2} \, \, \text{ic2} \, \, \text{e}^{\text{it}} \, \left(-1 + \text{e}^{-\text{it}} \right) \, + \, \frac{1}{2} \, \, \text{c1} \, \, \text{e}^{\text{it}} \, \left(1 + \text{e}^{-\text{it}} \right) \right) \, s \, + \, s^3 \, \, \text{z23}$$

$$\ln \left[-\frac{1}{2} \, \text{i} \, \text{c2} \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) + \frac{1}{2} \, \text{c1} \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, \text{s} + \text{s}^3 \, \text{z23} \right]$$

$$\textit{Out[*]} = \frac{\text{c1 s}}{2} - \frac{\text{i} \text{c2 s}}{2} + \frac{1}{2} \text{c1 e}^{\text{i t}} \text{s} + \frac{1}{2} \text{i} \text{c2 e}^{\text{i t}} \text{s} + \text{s}^3 \text{z23}$$

$$ln[\circ]:=$$
 % /. {c1 \rightarrow 1, c2 \rightarrow -I, C1 \rightarrow 1, C2 \rightarrow I, d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I * c, D2 \rightarrow -I * k} $Out[\circ]:=$ $e^{i t}$ S + S³ Z23

$$\ln \left[e^{-i \cdot t} \right] = \text{Expand} \left[\left(\frac{1}{2} \text{ is } e^{i \cdot t} \left(-1 + e^{-i \cdot t} \right) - \frac{1}{2} \text{ is } e^{i \cdot t} \left(1 + e^{-i \cdot t} \right) \right) s + p23 s^{3} \right]$$

Out[
$$\bullet$$
]= $-i e^{it} s + p23 s^3$

$$\begin{array}{l} & \text{Inf} @:= \text{ z3st /. } \{\text{c1} \rightarrow \text{1, c2} \rightarrow \text{-I, C1} \rightarrow \text{1, C2} \rightarrow \text{I, d1} \rightarrow \text{c, D1} \rightarrow \text{k, d2} \rightarrow \text{I*c, D2} \rightarrow \text{-I*k} \} \\ & \text{Outf} @:= \left(\frac{1}{2} \text{ c } \text{ e}^{\text{i t}} \left(-1 + \text{ e}^{-\text{i t}}\right) + \frac{1}{2} \text{ c } \text{ e}^{\text{i t}} \left(1 + \text{ e}^{-\text{i t}}\right)\right) \text{ s + s}^3 \text{ z33} \end{array}$$

$$ln[e] := Expand \left[\left(\frac{1}{2} c e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} c e^{it} \left(1 + e^{-it} \right) \right) s + s^3 z 33 \right]$$

$$Out[\bullet] = c s + s^3 z 33$$

$$\textit{Out[*]} = \left(\frac{1}{2} \text{ i d1 } \text{e}^{\text{i t}} \left(-1 + \text{e}^{-\text{i t}}\right) \right. \\ \left. + \frac{1}{2} \text{ d2 } \text{e}^{\text{i t}} \left(1 + \text{e}^{-\text{i t}}\right) \right) s + p33 s^3$$

$$\begin{array}{ll} & \text{In[@]:=} \text{ p3st /. } \{\text{c1} \rightarrow \text{1, c2} \rightarrow \text{-I, C1} \rightarrow \text{1, C2} \rightarrow \text{I, d1} \rightarrow \text{c, D1} \rightarrow \text{k, d2} \rightarrow \text{I*c, D2} \rightarrow \text{-I*k} \} \\ & \text{Out[@]:=} \left(\frac{1}{2} \text{ i c } \text{e}^{\text{i t}} \left(-1 + \text{e}^{-\text{i t}}\right) + \frac{1}{2} \text{ i c } \text{e}^{\text{i t}} \left(1 + \text{e}^{-\text{i t}}\right)\right) \text{ s + p33 s}^3 \end{array}$$

$$\ln[\text{e}] := \text{Expand} \left[\left(\frac{1}{2} \, \text{i c e}^{\text{i t}} \, \left(-1 + \text{e}^{-\text{i t}} \, \right) \, + \, \frac{1}{2} \, \text{i c e}^{\text{i t}} \, \left(1 + \text{e}^{-\text{i t}} \, \right) \right) \, \text{s + p33 s}^{3} \right]$$

Out[
$$\circ$$
]= $\dot{1}$ c s + p33 s³

$$\textit{Out[*]} = \left(\frac{1}{2} \text{ i C2 } \text{ e}^{-\text{i t}} \left(-1 + \text{ e}^{\text{i t}}\right) + \frac{1}{2} \text{ C1 } \text{ e}^{-\text{i t}} \left(1 + \text{ e}^{\text{i t}}\right)\right) \text{ s + s}^{3} \text{ Z23}$$

$$\begin{aligned} & & \text{In[@]:= } z2st \text{ /. } \{c1 \rightarrow 1\text{ , } c2 \rightarrow -I\text{ , } C1 \rightarrow 1\text{ , } C2 \rightarrow I\text{ , } d1 \rightarrow c\text{ , } D1 \rightarrow k\text{ , } d2 \rightarrow I*c\text{ , } D2 \rightarrow -I*k\} \\ & & \text{Out[@]= } \left(-\frac{1}{2} \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{e}^{-\text{i} \text{ t}}\right) + \frac{1}{2} \text{ e}^{\text{i} \text{ t}} \left(1 + \text{e}^{-\text{i} \text{ t}}\right)\right) \text{ } s + s^3 \text{ } z23 \end{aligned}$$

$$\ln[e] := \text{Expand} \left[\left(-\frac{1}{2} e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} e^{it} \left(1 + e^{-it} \right) \right) s + s^3 z 23 \right]$$

$$Out[\bullet] = \mathbb{e}^{it} s + s^3 z 23$$

$$\ln[=]:= \text{Expand}\left[\left(-\frac{1}{2} \, e^{-i \, t} \, \left(-1 + e^{i \, t}\right) + \frac{1}{2} \, e^{-i \, t} \, \left(1 + e^{i \, t}\right)\right) \, s + s^3 \, Z23\right]$$

Out[
$$\circ$$
]= $e^{-it} s + s^3 Z23$

$$\textit{ln[o]} = \texttt{p2st} \ / . \ \{\texttt{c1} \rightarrow \texttt{1} \ , \ \texttt{c2} \rightarrow -\texttt{I} \ , \ \texttt{C1} \rightarrow \texttt{1} \ , \ \texttt{C2} \rightarrow \texttt{I} \ , \ \texttt{d1} \rightarrow \texttt{c} \ , \ \texttt{D1} \rightarrow \texttt{k} \ , \ \texttt{d2} \rightarrow \texttt{I} \ \star \texttt{c} \ , \ \texttt{D2} \rightarrow -\texttt{I} \ \star \texttt{k} \}$$

$$\textit{Out[$^{\circ}$]$=} \left(\frac{1}{2} \, \dot{\mathbb{I}} \, e^{\dot{\mathbb{I}} \, t} \, \left(-1 + e^{-\dot{\mathbb{I}} \, t} \right) \, - \, \frac{1}{2} \, \dot{\mathbb{I}} \, e^{\dot{\mathbb{I}} \, t} \, \left(1 + e^{-\dot{\mathbb{I}} \, t} \right) \right) \, s \, + \, p23 \, s^3$$

$$\ln[e] = \text{Expand} \left[\left(\frac{1}{2} \, \dot{\mathbf{n}} \, e^{\dot{\mathbf{n}} \, t} \, \left(-1 + e^{-\dot{\mathbf{n}} \, t} \right) \, - \, \frac{1}{2} \, \dot{\mathbf{n}} \, e^{\dot{\mathbf{n}} \, t} \, \left(1 + e^{-\dot{\mathbf{n}} \, t} \right) \right) \, s + p23 \, s^3 \right]$$

Out[
$$\bullet$$
]= $-i e^{it} s + p23 s^3$

$$\text{In}[*]:= \text{P2st /. } \{\text{c1} \rightarrow \text{1, c2} \rightarrow \text{-I, C1} \rightarrow \text{1, C2} \rightarrow \text{I, d1} \rightarrow \text{c, D1} \rightarrow \text{k, d2} \rightarrow \text{I*c, D2} \rightarrow \text{-I*k} \}$$

Out[
$$\circ$$
]= $\left(-\frac{1}{2} \dot{\mathbb{I}} e^{-it} \left(-1 + e^{it}\right) + \frac{1}{2} \dot{\mathbb{I}} e^{-it} \left(1 + e^{it}\right)\right) s + P23 s^3$

$$log[a] := Expand \left[\left(-\frac{1}{2} i e^{-i t} \left(-1 + e^{i t} \right) + \frac{1}{2} i e^{-i t} \left(1 + e^{i t} \right) \right) s + P23 s^{3} \right]$$

$$\textit{Out[\bullet]} = \text{ is } \text{ e}^{-\text{is t}} \text{ s} + \text{P23 s}^3$$

$$\text{In}[*]:= \text{z3st} \text{ /. } \{\text{c1} \rightarrow \text{1} \text{ , } \text{c2} \rightarrow -\text{I} \text{ , } \text{C1} \rightarrow \text{1} \text{ , } \text{C2} \rightarrow \text{I} \text{ , } \text{d1} \rightarrow \text{c} \text{ , } \text{D1} \rightarrow \text{k} \text{ , } \text{d2} \rightarrow \text{I} \star \text{c} \text{ , } \text{D2} \rightarrow -\text{I} \star \text{k} \}$$

$$\textit{Out[*]} = \left(\frac{1}{2} c e^{it} \left(-1 + e^{-it}\right) + \frac{1}{2} c e^{it} \left(1 + e^{-it}\right)\right) s + s^3 z 33$$

$$\ln[e] := \text{Expand} \left[\left(\frac{1}{2} \text{ c } e^{i t} \left(-1 + e^{-i t} \right) + \frac{1}{2} \text{ c } e^{i t} \left(1 + e^{-i t} \right) \right) \text{ s + s}^{3} \text{ z33} \right]$$

Outfol=
$$c s + s^3 z 33$$

$$\textit{In}[\text{-}]:= \text{Z3st /. } \{\text{c1} \rightarrow \text{1, c2} \rightarrow \text{-I, c1} \rightarrow \text{1, c2} \rightarrow \text{I, d1} \rightarrow \text{c, D1} \rightarrow \text{k, d2} \rightarrow \text{I*c, D2} \rightarrow \text{-I*k}\}$$

$$Out[\bullet] = k s + s^3 Z33$$

$$ln[\cdot] = \text{Expand} \left[\left(\frac{1}{2} e^{-it} \left(-1 + e^{it} \right) k - \frac{1}{2} i e^{-it} \left(1 + e^{it} \right) k \right) s + s^3 Z33 \right]$$

Out[*]=
$$\left(\frac{1}{2} - \frac{i}{2}\right) k s - \left(\frac{1}{2} + \frac{i}{2}\right) e^{-i t} k s + s^3 Z33$$

In[*]:= ClearAll[Z31]

$$\ln[e] := \frac{1}{2} e^{-i p1 t} \left(1 + e^{i p1 t}\right) * d1 + \frac{i e^{-i p1 t} \left(-1 + e^{i p1 t}\right) * d2}{2 p1}$$

$$\textit{Out[*]} = -\frac{1}{2} \text{ i d2 } \text{ e}^{\text{i t}} \left(-1 + \text{ e}^{-\text{i t}}\right) + \frac{1}{2} \text{ d1 e}^{\text{i t}} \left(1 + \text{ e}^{-\text{i t}}\right)$$

$$ln[\cdot]:= \text{Expand}\left[-\frac{1}{2} \pm d2 e^{\pm t} \left(-1 + e^{-\pm t}\right) + \frac{1}{2} d1 e^{\pm t} \left(1 + e^{-\pm t}\right)\right]$$

$$\textit{Out[*]} = \frac{d1}{2} - \frac{i \ d2}{2} + \frac{1}{2} \ d1 \ e^{i \ t} + \frac{1}{2} \ i \ d2 \ e^{i \ t}$$

$$lor_{0} = Z31 := D1/2 + I * D2/2 + D1 * Exp[-I * t]/2 - I * D2 * Exp[-I * t]/2$$

$$\textit{Out[*]} = \frac{\mathsf{D1}}{2} + \frac{\dot{\mathbb{1}} \; \mathsf{D2}}{2} + \frac{1}{2} \; \mathsf{D1} \; e^{-\dot{\mathbb{1}} \; t} - \frac{1}{2} \; \dot{\mathbb{1}} \; \mathsf{D2} \; e^{-\dot{\mathbb{1}} \; t}$$

$$\textit{In}[*]:= \ \ Z31 \ /. \ \{c1 \rightarrow 1 \ , \ c2 \rightarrow -I \ , \ C1 \rightarrow 1 \ , \ C2 \rightarrow I \ , \ d1 \rightarrow c \ , \ D1 \rightarrow k \ , \ d2 \rightarrow I * c \ , \ D2 \rightarrow -I * k\}$$

 $Out[\circ]= k$

$$\textit{Out[*]} = \left(\frac{\text{D1}}{2} + \frac{\text{i} \ \text{D2}}{2} + \frac{1}{2} \ \text{D1} \ \text{e}^{-\text{i} \ \text{t}} - \frac{1}{2} \ \text{i} \ \text{D2} \ \text{e}^{-\text{i} \ \text{t}} \right) \ s + s^3 \ Z33$$

$$\text{In}[*]:= \text{Z3st /. } \{\text{c1} \rightarrow \text{I} \text{ , } \text{c2} \rightarrow -\text{I} \text{ , } \text{C1} \rightarrow \text{I} \text{ , } \text{C2} \rightarrow \text{I} \text{ , } \text{d1} \rightarrow \text{c} \text{ , } \text{D1} \rightarrow \text{k} \text{ , } \text{d2} \rightarrow \text{I*c}, \text{D2} \rightarrow -\text{I*k} \}$$

 $Out[\bullet] = k s + s^3 Z33$

$$\textit{Out[*]} = \left(-\; \frac{1}{2} \; \text{$\stackrel{1}{\text{$L$}}$} \; \text{$D1$} \; \text{e^{-i}}^{\,\,\text{t}} \; \left(-\; 1\; +\; e^{i} \; ^{\,\,\text{t}} \right) \; +\; \frac{1}{2} \; \text{$D2$} \; e^{-i} \; ^{\,\,\text{t}} \; \left(1\; +\; e^{i} \; ^{\,\,\text{t}} \right) \; \right) \; s \; +\; P33 \; s^3$$

$$ln[\circ]:= P3st /. \{c1 \rightarrow 1, c2 \rightarrow -I, c1 \rightarrow 1, c2 \rightarrow I, d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I*c, D2 \rightarrow -I*k\}$$

$$\textit{Out[s]} = \left(-\frac{1}{2} \text{ is } \text{ e}^{-\text{it}} \left(-1 + \text{ e}^{\text{it}} \right) \text{ k} - \frac{1}{2} \text{ is } \text{ e}^{-\text{it}} \left(1 + \text{ e}^{\text{it}} \right) \text{ k} \right) \text{ s} + \text{P33 s}^3$$

$$\ln[\text{e}] := \text{Expand} \left[\left(-\frac{1}{2} \, \dot{\text{l}} \, \, \text{e}^{-\dot{\text{l}} \, \, \text{t}} \, \left(-1 + \text{e}^{\dot{\text{l}} \, \, \text{t}} \right) \, k \, - \, \frac{1}{2} \, \dot{\text{l}} \, \, \text{e}^{-\dot{\text{l}} \, \, \text{t}} \, \left(1 + \text{e}^{\dot{\text{l}} \, \, \text{t}} \right) \, k \right) \, s \, + \, \text{P33 } \, s^3 \, \right]$$

$$\textit{Out[} \bullet \textit{]=} - i k s + P33 s^3$$

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ln[\bullet]:=\frac{1}{8}e^{\frac{it}{2}}
                                          \left(2~e^{-i.t.}~\left(a~\left(c1^{2}~\left(C1-2~i.C2\right)+c2~\left(C1~c2-2~D1~d2+2~d1~D2\right)-2~c1~\left(c2~C2+d1~D1-2~i.d1~D2-d2\right)\right)\right)
                                                                                                                                            D2)) + (-2 \pm C2 d1 + C1 (d1 + \pm d2)) (d1 - \pm d2) G) + e^{-2 \pm t}
                                                                        (-a (c1 - i c2) (-i C1 c2 + c1 (C1 - i C2) - c2 C2 - 2 d1 D1 + 2 i D1 d2 + 2 i d1 D2 + 2 d2 D2) -
                                                                                        (C1 - i C2) (d1 - i d2)^2 G
                                                             2 e^{i t} (a (c1^{2} (C1 + 2 i C2) + c2 (C1 c2 - 2 D1 d2 + 2 d1 D2) -
                                                                                                              2 c1 \left(c2 C2 + d1 D1 + 2 i d1 D2 - d2 D2\right) + \left(2 i C2 d1 + C1 \left(d1 - i d2\right)\right) \left(d1 + i d2\right) G\right) + \left(2 i C2 d1 + C1 d1 - i d2\right)
                                                             e^{2 i t} \left(-a \left(c1+i c2\right) \left(i C1 c2+c1 \left(C1+i C2\right)-c2 C2-2 d1 D1-2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-
                                                                                                              2 \pm d1 D2 + 2 d2 D2) - (C1 + \pm C2) (d1 + \pm d2)^2 G +
                                                             4 \left( a \left( -\,\dot{\mathtt{n}} \,\, c1 + c2 \right) \,\left( \dot{\mathtt{n}} \,\, C1 \,\, c2 + c1 \,\, \left( C1 - \dot{\mathtt{n}} \,\, C2 \right) \,+ c2 \,\, C2 - 2 \,\, d1 \,\, D1 - 2 \,\,\dot{\mathtt{n}} \,\, D1 \,\, d2 + 2 \,\,\dot{\mathtt{n}} \,\, d1 \,\, D2 - 2 \,\, d2 \,\, D2 \right) \,- \,\, d2 \,\, d2 \,\, D2 \right) \,\, d2 + 2 \,\,\dot{\mathtt{n}} \,\, d1 \,\, D2 \,\, d2 \,\, d2 \,\, D2 \,\, d2 \,\, d3 \,\, D3 \,\, d3 \,\, d4 \,\, d
                                                                                     \dot{\pi} \left( C1 - \dot{\pi} C2 \right) \left( d1 + \dot{\pi} d2 \right)^{2} G \right) t \cos \left[ \frac{t}{2} \right] + e^{\frac{\dot{\pi} t}{2}} C[1] \cos \left[ \frac{t}{2} \right] -
                                        \dot{\text{1}} (c2 C2 + 2 d1 D1 + 2 \dot{\text{1}} D1 d2 + 2 \dot{\text{1}} d1 D2 - 2 d2 D2)) + (-\dot{\text{1}} C1 + C2) (d1 + \dot{\text{1}} d2)<sup>2</sup> G) +
                                                             2 e^{i t} (a (c1^2 C2 - 2 c1 (C1 c2 - D1 d2 + d1 D2) + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 (-2 i C1 c2 + c2 (-2 i C1 c2 + c2 
                                                                                                                                     4 \pm D1 d2 - 2 d2 D2) + (d1 + \pm d2) (C2 (d1 - \pm d2) - 2 C1 d2) G) -
                                                              2 e^{-i t} (a (c1<sup>2</sup> C2 - 2 c1 (C1 c2 - D1 d2 + d1 D2) + c2 (2 i C1 c2 + c2 C2 + 2 d1 D1 -
                                                                                                                                     4 \pm D1 d2 - 2 d2 D2) + (d1 - \pm d2) (C2 (d1 + \pm d2) - 2 C1 d2) G) -
                                                              4 a (c1 + i c2) (i C1 c2 + c1 (C1 - i C2) + c2 C2 - 2 d1 D1 - 2 i D1 d2 + 2 i d1 D2 - 2 d2 D2) t -
                                                             4 (C1 - \pm C2) (d1 + \pm d2)<sup>2</sup> G t) Sin[\frac{t}{2}] - e^{\frac{it}{2}} C[2] Sin[\frac{t}{2}]
```

$$\begin{array}{c} \cos (i+\frac{1}{8}) = \frac{i \cdot t}{2} \\ & \left(2 \, e^{-i \cdot t} \, \left(a \, \left(c1^2 \, \left(C1 - 2 \, i \, C2\right\right) + c2 \, \left(C1 \, c2 - 2 \, D1 \, d2 + 2 \, d1 \, D2\right) - 2 \, c1 \, \left(c2 \, C2 + d1 \, D1 - 2 \, i \, d1 \, D2 - d2 \right) \right. \\ & \left(-a \, \left(c1 - i \, c2\right) \, \left(-i \, C1 \, c2 + c1 \, \left(C1 - i \, C2\right) - c2 \, C2 - 2 \, d1 \, D1 + 2 \, i \, D1 \, d2 + 2 \, i \, d1 \, D2 + 2 \, d2 \, D2\right) - \left. \left(C1 - i \, C2\right) \, \left(d1 - i \, d2\right)^2 \, G\right) - \\ & \left(-a \, \left(c1 - i \, c2\right) \, \left(-i \, C1 \, c2 + c1 \, \left(C1 - i \, C2\right) - c2 \, C2 - 2 \, d1 \, D1 + 2 \, i \, D1 \, d2 + 2 \, i \, d1 \, D2 + 2 \, d2 \, D2\right) - \left. \left(C1 - i \, C2\right) \, \left(d1 - i \, d2\right)^2 \, G\right) - \\ & \left(-a \, \left(c1 - i \, c2\right) \, \left(d1 - i \, d2\right)^2 \, G\right) - 2 \, e^{i \cdot t} \, \left(a \, \left(c1^2 \, \left(C1 + 2 \, i \, C2\right) + c2 \, \left(C1 \, c2 - 2 \, D1 \, d2 + 2 \, d1 \, D2\right) - 2 \, c1 \, \left(c2 \, C2 + d1 \, D1 + 2 \, i \, d1 \, D2 - d2 \, D2\right)\right) + \left(2 \, i \, C2 \, d1 \, C1 + i \, d2\right) \, \left(d1 + i \, d2\right) \, G\right) + e^{2i \cdot t} \, \left(-a \, \left(c1 + i \, c2\right) \, \left(i \, C1 \, c2 + c1 \, \left(C1 + i \, C2\right) - c2 \, C2 - 2 \, d1 \, D1 - 2 \, i \, D1 \, d2 - 2 \, d2 \, D2\right) - i \, \left(C1 - i \, C2\right) \, \left(i \, C1 \, c2 + c1 \, \left(C1 - i \, C2\right) + c2 \, C2 - 2 \, d1 \, D1 - 2 \, i \, D1 \, d2 - 2 \, d2 \, D2\right) - i \, \left(C1 - i \, C2\right) \, \left(d1 + i \, d2\right)^2 \, G\right) \, t\right) \, Cos\left[\frac{t}{2}\right] + \frac{e^{i \cdot t}}{2} \, C[1] \, Cos\left[\frac{t}{2}\right] - \frac{1}{8} \, e^{\frac{i \cdot t}{2}} \, \left(e^{-2i \cdot t} \, \left(a \, \left(i \, c1 + c2\right) \, \left(-i \, C1 \, c2 + c1 \, \left(C1 - i \, c2\right) - c2 \, C2 - 2 \, d1 \, D1 + 2 \, i \, D1 \, d2 +$$

In[*]:= TrigReduce[%182]

$$\textit{Out}[\texttt{o}] = -2 \; \texttt{i} \; + 2 \; \texttt{i} \; x^2 \; - 4 \; \texttt{i} \; y \; + \; 2 \; \texttt{i} \; y^2$$

$$\textit{Out}[\texttt{o}] = -2 \ \texttt{i} \ + 2 \ \texttt{i} \ \texttt{x}^2 - 4 \ \texttt{i} \ \texttt{y} + 2 \ \texttt{i} \ \texttt{y}^2$$

 $\ln[*] = \frac{1}{2} \text{ a c1}^2 \text{ C1} + \frac{1}{4} \pm \text{ a c1} \text{ C1 c2} + \frac{3}{4} \text{ a C1 c2}^2 - \frac{3}{4} \pm \text{ a c1}^2 \text{ C2} - \frac{1}{4} \text{ a c1 c2 C2} - \frac{1}{4} \pm \text{ a c2}^2 \text{ C2} - \frac{1}{4} \text{ a c1 d1 D1} - \frac{1}{4} + \frac{1}{4} \pm \frac{1}{4} + \frac{1}{4} \pm \frac{1}{4} + \frac{1}$ $\frac{1}{4}$ is a c2 d1 D1 - $\frac{1}{4}$ is a c1 D1 d2 - $\frac{3}{4}$ a c2 D1 d2 + $\frac{3}{4}$ is a c1 d1 D2 + $\frac{1}{4}$ a c2 d1 D2 + $\frac{1}{4}$ a c1 d2 D2 + $\frac{1}{4} \pm a \, c2 \, d2 \, D2 - \frac{1}{2} \, a \, c1^2 \, C1 \, e^{i \, t} + \frac{1}{4} \pm a \, c1 \, C1 \, c2 \, e^{i \, t} - \frac{3}{2} \, a \, C1 \, c2^2 \, e^{i \, t} - \frac{3}{2} \pm a \, c1^2 \, C2 \, e^{i \, t} + \frac{3}{2} \pm a \, c1^2 \, C2 \, e^{i \, t}$ $\frac{1}{4}$ a c1 c2 C2 e^{it} - $\frac{1}{9}$ ii a c2² C2 e^{it} + $\frac{1}{4}$ a c1 d1 D1 e^{it} - $\frac{1}{4}$ ii a c2 d1 D1 e^{it} - $\frac{1}{4}$ ii a c1 D1 d2 e^{it} + $\frac{3}{4} \text{ a c2 D1 d2 } \text{ e}^{\text{i} \, \text{t}} + \frac{3}{4} \, \text{ii a c1 d1 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \text{ a c2 d1 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \text{ a c1 d2 D2 } \text{ e}^{\text{i} \, \text{t}} + \frac{1}{4} \, \text{ii a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} + \frac{1}{4} \, \text{ ii a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} + \frac{1}{4} \, \text{ ii a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} + \frac{1}{4} \, \text{ ii a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} - \frac{1}{4} \, \text{ a c2 d2 D2 } \text{ e}^{\text{i} \, \text{t}} + \frac{1}{4} \, \text{ a c2 d2$ $\frac{1}{4} \text{ a c1}^2 \text{ C1 } \text{ e}^{2 \pm \text{i} \, \text{t}} - \frac{1}{2} \pm \text{a c1 C1 c2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{4} \text{ a C1 c2}^2 \text{ e}^{2 \pm \text{i} \, \text{t}} - \frac{1}{4} \pm \text{a c1}^2 \text{ C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c1 c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{1}{2} \text{ e}^{2 \pm \text{i} \, \text{t}} + \frac{$ $\frac{1}{4}$ i a c2² C2 e^{2 i t} + $\frac{1}{2}$ a c1 d1 D1 e^{2 i t} + $\frac{1}{2}$ i a c2 d1 D1 e^{2 i t} + $\frac{1}{2}$ i a c1 D1 d2 e^{2 i t} - $\frac{1}{2}$ a c2 D1 d2 $e^{2it} + \frac{1}{2}i$ a c1 d1 D2 $e^{2it} - \frac{1}{2}$ a c2 d1 D2 $e^{2it} - \frac{1}{2}$ a c1 d2 D2 $e^{2it} - \frac{1}{2}$ $\frac{1}{2}$ i a c2 d2 D2 e^{2it} + $\frac{1}{2}$ C1 d1² G - $\frac{3}{2}$ i C2 d1² G + $\frac{1}{4}$ i C1 d1 d2 G - $\frac{1}{4}$ C2 d1 d2 G + $\frac{3}{8}$ C1 d2² G - $\frac{1}{8}$ i C2 d2² G - $\frac{1}{8}$ C1 d1² e^{i t} G - $\frac{3}{8}$ i C2 d1² e^{i t} G + $\frac{1}{4}$ i C1 d1 d2 e^{i t} G + $\frac{1}{1} \text{ C2 d1 d2 } e^{i \, t} \text{ G} - \frac{3}{2} \text{ C1 d2}^2 e^{i \, t} \text{ G} - \frac{1}{2} \, i \text{ C2 d2}^2 e^{i \, t} \text{ G} - \frac{1}{4} \text{ C1 d1}^2 e^{2 \, i \, t} \text{ G} - \frac{1}{4} \, i \text{ C2 d1}^2 e^{2 \, i \, t} \text{ G} - \frac{1}{4} \, i \text{ C2 d1}^2 e^{2 \, i \, t} \text{ G} - \frac{1}{4} \, i \text{ C2 d2}^2 e^{2 \, i \, t} \text{$ $\frac{1}{2} \pm C1 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{1}{2} \, C2 \, d1 \, d2 \, e^{2 \pm t} \, G + \frac{1}{4} \, C1 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \pm C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d \, C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d \, C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d \, C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d \, C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d \, C2 \, d2^2 \, e^{2 \pm t} \, G + \frac{1}{4} \, d2^2 \, e^2 \, d2^$ $e^{it}\left(-\frac{1}{2}iac1^2C1 + ac1C1c2 + \frac{1}{2}iaC1c2^2 - \frac{1}{2}ac1^2C2 - iac1c2C2 + \frac{1}{2}ac2^2C2 + \frac{1}{2}ac1^2C2 - iac1c2C2 + \frac{1}{2}ac2^2C2 + \frac{1}{2}ac1^2C2 - iac1c2C2 + \frac{1}{2}ac1^2C2 - iac1^2C2 - iac1^2$ i a c1 d1 D1 - a c2 d1 D1 - a c1 D1 d2 - i a c2 D1 d2 + a c1 d1 D2 + i a c2 d1 D2 + i a c1 d2 D2 a c2 d2 D2 - $\frac{1}{2}$ \pm C1 d1² G - $\frac{1}{2}$ C2 d1² G + C1 d1 d2 G - \pm C2 d1 d2 G + $\frac{1}{2}$ \pm C1 d2² G + $\frac{1}{2}$ C2 d2² G t /. {c1 \rightarrow 1, c2 \rightarrow -I, C1 \rightarrow 1, C2 \rightarrow I, d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I * c, D2 \rightarrow -I * k} $Out[\bullet] = a e^{it} + 2 a c e^{it} k - 4 i a e^{it} t$

 $log_{\text{o}} = \text{Collect} \left[-\frac{1}{2} \pm \text{a c1}^2 \text{C1} + \text{a c1 C1 c2} + \frac{1}{2} \pm \text{a C1 c2}^2 - \frac{1}{2} \text{a c1}^2 \text{C2} - \pm \text{a c1 c2 C2} + \frac{1}{2} \text{a c2}^2 \text{C2} + \frac{1}{2} \text{c2}^2 \text{C2} + \frac{1$ i a c1 d1 D1 - a c2 d1 D1 - a c1 D1 d2 - i a c2 D1 d2 + a c1 d1 D2 + i a c2 d1 D2 + i a c1 d2 D2 a c2 d2 D2 - $\frac{1}{2}$ ± C1 d1² G - $\frac{1}{2}$ C2 d1² G + C1 d1 d2 G - ± C2 d1 d2 G + $\frac{1}{2}$ ± C1 d2² G + $\frac{1}{2}$ C2 d2² G, a $\frac{1}{2}$ ± C1 d1² G - $\frac{1}{2}$ C2 d1² G + C1 d1 d2 G - ± C2 d1 d2 G + $\frac{1}{2}$ ± C1 d2² G + $\frac{1}{2}$ C2 d2² G

In[*]:= Simplify[%186]

$$Out[*]= \left(1 + \frac{1}{2}\right) \left(-5 \text{ i} + 2 \text{ i} \text{ d2 D2} + 2 \text{ c} \left(\text{D2} + \text{i} \text{ k}\right) - 2 \text{ d2 k}\right)$$

$$\ln[*] := -\frac{1}{2} \, \text{ii} \, \text{c1}^2 \, \text{C1} + \text{c1} \, \text{C1} \, \text{c2} + \frac{1}{2} \, \text{ii} \, \text{C1} \, \text{c2}^2 - \frac{\text{c1}^2 \, \text{C2}}{2} - \text{ii} \, \text{c1} \, \text{c2} \, \text{C2} + \frac{\text{c2}^2 \, \text{C2}}{2} + \text{ii} \, \text{c1} \, \text{d1} \, \text{D1} - \text{c2} \, \text{d1} \, \text{D1} - \text{c1} \, \text{D1} \, \text{d2} - \text{ii} \, \text{c2} \, \text{D1} \, \text{d2} + \text{c1} \, \text{d1} \, \text{D2} + \text{ii} \, \text{c2} \, \text{d1} \, \text{D2} + \text{ii} \, \text{c1} \, \text{d2} \, \text{D2} - \text{c2} \, \text{d2} \, \text{D2} /. \\ \{\text{c1} \to \text{1} \, , \, \text{c2} \to -\text{I} \, , \, \text{C1} \to \text{1} \, , \, \text{C2} \to \text{I} \, , \, \text{d1} \to \text{c} \, , \, \text{D1} \to \text{k} \, , \, \text{d2} \to \text{I*c} \, , \, \text{D2} \to -\text{I*k} \, \}$$

$$Out[*] := -\frac{1}{2} \, \text{ii} \, \text{c1}^2 \, \text{C1} + \text{c1} \, \text{C1} \, \text{c2} + \frac{1}{2} \, \text{ii} \, \text{C1} \, \text{c2}^2 - \frac{\text{c1}^2 \, \text{C2}}{2} - \text{ii} \, \text{c1} \, \text{c2} \, \text{C2} + \frac{\text{c2}^2 \, \text{C2}}{2} + \text{ii} \, \text{c1} \, \text{d1} \, \text{D1} - \text{c2} + \frac{\text{c1}^2 \, \text{C1}}{2} + \frac{\text{c1}^2 \, \text{C1}}{2$$

$$\ln[*] := -\frac{1}{2} \, \text{ii} \, \text{c1}^2 \, \text{C1} + \text{c1} \, \text{C1} \, \text{c2} + \frac{1}{2} \, \text{ii} \, \text{C1} \, \text{c2}^2 - \frac{\text{c1}^2 \, \text{C2}}{2} - \text{ii} \, \text{c1} \, \text{c2} \, \text{C2} + \frac{\text{c2}^2 \, \text{C2}}{2} + \text{ii} \, \text{c1} \, \text{d1} \, \text{D1} - \text{c2} \, \text{d1} \, \text{D1} - \text{c1} \, \text{D1} \, \text{d2} - \text{ii} \, \text{c2} \, \text{D1} \, \text{d2} + \text{c1} \, \text{d1} \, \text{D2} + \text{ii} \, \text{c2} \, \text{d1} \, \text{D2} + \text{ii} \, \text{c1} \, \text{d2} \, \text{D2} - \text{c2} \, \text{d2} \, \text{D2} / \text{c2} + \frac{\text{c2}^2 \, \text{C2}}{2} + \text{c2} \, \text{d1} \, \text{D1} + \text{c2} \, \text{d2} \, \text{D2} + \text{c2} \, \text{d2} \, \text{$$

$$Out[*] = -4 i + 2 c D2 + 2 i d2 D2 + 2 i c k - 2 d2 k$$

$$\ln[\text{e}]:= -4\,\dot{\textbf{1}} + 2\,c\,D2 + 2\,\dot{\textbf{1}}\,d2\,D2 + 2\,\dot{\textbf{1}}\,c\,k - 2\,d2\,k \text{ /. } \{c\rightarrow\textbf{1,}\,k\rightarrow\textbf{1}\}$$

$$Out[\ \ \ \]=\ \ -2\ \ \dot{\ \ }\ \ -2\ \ d2\ +2\ \ D2\ +2\ \ \dot{\ \ }\ \ d2\ \ D2$$

$$\ln \{\#\} := -2 \, \dot{\mathbf{1}} - 2 \, d2 + 2 \, D2 + 2 \, \dot{\mathbf{1}} \, d2 \, D2 \ / \, \cdot \ \{d2 \ \rightarrow \ x + \mathbf{I} * y \,, \ D2 \ \rightarrow \ x \ - \ \mathbf{I} * y \}$$

$$\textit{Out[*]} = \ -2 \ \dot{\mathbb{1}} \ + \ 2 \ \left(x - \dot{\mathbb{1}} \ y \right) \ - \ 2 \ \left(x + \dot{\mathbb{1}} \ y \right) \ + \ 2 \ \dot{\mathbb{1}} \ \left(x - \dot{\mathbb{1}} \ y \right) \ \left(x + \dot{\mathbb{1}} \ y \right)$$

$$ln[*]:= Expand \left[-2 \, \dot{\mathbb{1}} + 2 \, \left(x - \dot{\mathbb{1}} \, y\right) - 2 \, \left(x + \dot{\mathbb{1}} \, y\right) + 2 \, \dot{\mathbb{1}} \, \left(x - \dot{\mathbb{1}} \, y\right) \, \left(x + \dot{\mathbb{1}} \, y\right)\right]$$

$$\textit{Out[•]= } -2 \ \dot{\mathbb{1}} \ + 2 \ \dot{\mathbb{1}} \ x^2 \ - 4 \ \dot{\mathbb{1}} \ y \ + 2 \ \dot{\mathbb{1}} \ y^2$$

$$\textit{Out}[*] = -\frac{1}{2} \, \, \dot{\mathbb{I}} \, \, c1^2 \, C1 + c1 \, C1 \, c2 + \frac{1}{2} \, \dot{\mathbb{I}} \, \, C1 \, c2^2 - \frac{c1^2 \, C2}{2} - \dot{\mathbb{I}} \, \, c1 \, c2 \, C2 + \frac{c2^2 \, C2}{2} + \dot{\mathbb{I}} \, \, c1 \, d1 \, D1 - c2 \, d1 \, D1 - c1 \, D1 \, d2 - \dot{\mathbb{I}} \, c2 \, D1 \, d2 + c1 \, d1 \, D2 + \dot{\mathbb{I}} \, c2 \, d1 \, D2 + \dot{\mathbb{I}} \, c1 \, d2 \, D2 - c2 \, d2 \, D2$$

$$\begin{split} \textit{Out[*]} &= \; - \; \frac{\dot{\mathbb{I}}}{2} \; + \; c \; \mathsf{D2} \; + \; \dot{\mathbb{I}} \; \; \mathsf{d2} \; \mathsf{D2} \; - \; \frac{1}{2} \; \dot{\mathbb{I}} \; \; \left(\; \mathsf{1} \; - \; \dot{\mathbb{I}} \; \; e \right) \; - \; \dot{\mathbb{I}} \; \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; + \\ & c \; \mathsf{D2} \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; + \; \dot{\mathbb{I}} \; \; \mathsf{d2} \; \mathsf{D2} \; \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; - \; \dot{\mathbb{I}} \; \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; - \; \frac{1}{2} \; \dot{\mathbb{I}} \; \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) ^{\; 2} \; - \\ & \; \frac{1}{2} \; \dot{\mathbb{I}} \; \left(\; \mathsf{1} \; - \; \dot{\mathbb{I}} \; \; e \right) \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) ^{\; 2} \; + \; \dot{\mathbb{I}} \; \; c \; k \; - \; d2 \; k \; + \; \dot{\mathbb{I}} \; c \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; k \; - \; d2 \; \left(\; \mathsf{1} \; + \; \dot{\mathbb{I}} \; \; e \right) \; k \end{split}$$

Out[*]=
$$\frac{1}{2} \left(i c2 \left(-1 + e^{it} \right) + c1 \left(1 + e^{it} \right) \right)$$

Out[\circ]= $-4 i + 2 e - i e^2 + \frac{e^3}{2}$

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ln[\bullet]:= \frac{1}{8} e^{\frac{it}{2}}
                                                      (2 e^{-it} (a (c1^2 (C1 - 2 i C2) + c2 (C1 c2 - 2 D1 d2 + 2 d1 D2) - 2 c1 (c2 C2 + d1 D1 - 2 i d1 D2 - d2))
                                                                                                                                                                                 D2)) + (-2 \pm C2 d1 + C1 (d1 + \pm d2)) (d1 - \pm d2) G) + e^{-2 \pm t}
                                                                                          \left(-a\left(c1-ic2\right)\left(-ic1c2+c1\left(C1-ic2\right)-c2C2-2d1D1+2icD1d2+2icd1D2+2d2D2\right)-c2C2-2d1D1+2icD1d2+2icd1D2+2d2D2\right)
                                                                                                               (C1 - i C2) (d1 - i d2)^2 G
                                                                             2 e^{it} (a (c1<sup>2</sup> (C1 + 2 it C2) + c2 (C1 c2 - 2 D1 d2 + 2 d1 D2) -
                                                                                                                                           2 c1 (c2 C2 + d1 D1 + 2 i d1 D2 - d2 D2)) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) (d1 + i d2) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2)) G) + (2 i C2 d1 + C1 (d1 - i d2
                                                                             e^{2 i t} \left(-a \left(c1+i c2\right) \left(i C1 c2+c1 \left(C1+i C2\right)-c2 C2-2 d1 D1-2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-c2 d1 D1-c2 i D1 d2-c2 C2-c2 C2-
                                                                                                                                           2 \pm d1 D2 + 2 d2 D2) - (C1 + \pm C2) (d1 + \pm d2)^2 G +
                                                                             4 (a (-i c1 + c2) (i C1 c2 + c1 (C1 - i C2) + c2 C2 - 2 d1 D1 - 2 i D1 d2 + 2 i d1 D2 - 2 d2 D2) -
                                                                                                           \dot{\pi} \left( C1 - \dot{\pi} C2 \right) \left( d1 + \dot{\pi} d2 \right)^{2} G \right) t \cos \left[ \frac{t}{2} \right] + e^{\frac{\dot{\pi} t}{2}} C[1] \cos \left[ \frac{t}{2} \right] -
                                                  2 \; d2 \; D2 \Big) \; + \; \Big( \dot{\mathtt{i}} \; C1 \; + \; C2 \Big) \; \Big( d1 \; - \; \dot{\mathtt{i}} \; d2 \Big)^{\; 2} \; G \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( C1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; C1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; C1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; C2 \Big) \; + \; e^{2 \; \dot{\mathtt{i}} \; t} \; \Big( a \; \Big( c1 \; + \; \dot{\mathtt{i}} \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c1 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c1 \; \Big( - \; \dot{\mathtt{i}} \; c2 \; + \; c2 \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big) \; \Big( c1 \; c2 \; + \; c2 \; \Big)
                                                                                                                                          \dot{n} (c2 C2 + 2 d1 D1 + 2 \dot{n} D1 d2 + 2 \dot{n} d1 D2 - 2 d2 D2)) + (-\dot{n} C1 + C2) (d1 + \dot{n} d2)<sup>2</sup> G) +
                                                                             2 e^{i t} (a (c1^2 C2 - 2 c1 (C1 c2 - D1 d2 + d1 D2) + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 C2 + 2 d1 D1 + c2 (-2 i C1 c2 + c2 (-2 i C1 c2 + c2 (-2 i C1 c2 + c2 
                                                                                                                                                                       4 \pm D1 d2 - 2 d2 D2)) + (d1 + \pm d2) (C2 (d1 - \pm d2) - 2 C1 d2) G) -
                                                                              2 e^{-i t} (a (c1<sup>2</sup> C2 - 2 c1 (C1 c2 - D1 d2 + d1 D2) + c2 (2 i C1 c2 + c2 C2 + 2 d1 D1 -
                                                                                                                                                                        4 \pm D1 d2 - 2 d2 D2) + (d1 - \pm d2) (C2 (d1 + \pm d2) - 2 C1 d2) G) -
                                                                              4 a (c1 + i c2) (i C1 c2 + c1 (C1 - i C2) + c2 C2 - 2 d1 D1 - 2 i D1 d2 + 2 i d1 D2 - 2 d2 D2) t -
                                                                             4 (C1 - \pm C2) (d1 + \pm d2)<sup>2</sup> G t) Sin[\frac{t}{2}] - e^{\frac{it}{2}} C[2] Sin[\frac{t}{2}]
```

/// Info]:= TrigReduce[%1]

$$\begin{aligned} & \frac{1}{8} \text{ a c } 1^2 \text{ C } 1 + \frac{1}{4} \text{ i a c } 1 \text{ C 1 } 2 + \frac{3}{8} \text{ a C 1 } 2^2 - \frac{3}{8} \text{ i a } 1^2 \text{ C } 2 - \frac{1}{4} \text{ a c 1 } 2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2^2 \text{ C } 2 - \frac{1}{8} \text{ i a } 2 \text{ C } 10 \text{ D } 2 + \frac{3}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 + \frac{1}{4} \text{ i a } 2 \text{ C } 2 \text{ C } 2 \text{ e}^{1 \text{ T }} + \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 + \frac{1}{4} \text{ i a } 2 \text{ C } 2 \text{ C } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 + \frac{1}{4} \text{ i a } 2 \text{ C } 2 \text{ C } 2 \text{ e}^{1 \text{ T }} + \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ i a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{1 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }} - \frac{1}{4} \text{ a } 2 \text{ C } 10 \text{ D } 2 \text{ e}^{2 \text{ T }}$$

$$\ln[e] := \text{ Expand} \left[-\frac{1}{2} \text{ is } \text{ c2 } \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{ e}^{-\text{i} \text{ t}} \right) + \frac{1}{2} \text{ c1 } \text{ e}^{\text{i} \text{ t}} \left(1 + \text{ e}^{-\text{i} \text{ t}} \right) \right]$$

$$\textit{Out[\circ]=} \ \frac{\text{c1}}{2} - \frac{\text{i}}{2} \frac{\text{c2}}{2} + \frac{1}{2} \text{c1} \, \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \, \text{i} \, \text{c2} \, \text{e}^{\text{i} \, \text{t}}$$

$$log_{0} = Solve[c1/2 - I*c2/2 = 0 \& c1/2 + I*c2/2 = 1, \{c1, c2\}]$$

Out[
$$\bullet$$
]= $\{ \{ c1 \rightarrow 1, c2 \rightarrow -i \} \}$

$$lole = Solve \left[\frac{c1}{2} - \frac{i c2}{2} + \left(\frac{c1}{2} + \frac{i c2}{2} \right) e^{i t} = Exp[I * t], \{c1, c2\} \right]$$

... Solve: Equations may not give solutions for all "solve" variables.

$$\textit{Out[*]=} \ \Big\{ \Big\{ c2 \rightarrow - \frac{2 \ \dot{\mathbb{1}} \ e^{i \ t}}{-1 + e^{i \ t}} + \frac{\dot{\mathbb{1}} \ c1 \ \Big(1 + e^{i \ t}\Big)}{-1 + e^{i \ t}} \Big\} \Big\}$$

$$\textit{Out[*]} = \left(-\frac{1}{2} \text{ id } d2 \text{ e}^{\text{it}} \left(-1 + \text{ e}^{-\text{it}} \right) + \frac{1}{2} d1 \text{ e}^{\text{it}} \left(1 + \text{ e}^{-\text{it}} \right) \right) s + s^3 z 33$$

$$\textit{Out}[*] = \left(-\frac{1}{2} \text{ id } d2 \text{ e}^{\text{it}} \left(-1 + \text{ e}^{-\text{it}} \right) + \frac{1}{2} d1 \text{ e}^{\text{it}} \left(1 + \text{ e}^{-\text{it}} \right) \right) s + s^3 z 33$$

Out[*]= 2
$$\left(-\frac{p3}{4} - a p3 z2 Z2 + \frac{i z3}{4} - a p2 Z2 z3 + i a z2 Z2 z3 + g p2 z2 Z3 - \frac{1}{2} i g z2^2 Z3 + a p3 z3 Z3 - \frac{1}{2} i a z3^2 Z3\right)$$

Out[*]=
$$-\frac{p3}{2}$$
 - 2 a p3 z2 Z2 + $\frac{i z3}{2}$ - 2 a p2 Z2 z3 + 2 i a z2 Z2 z3 + 2 g p2 z2 Z3 - i g z2² Z3 + 2 a p3 z3 Z3 - i a z3² Z3

In[•]:= dp3

$$\textit{Out}[*] = -2 \left(-\frac{\text{ii} p3}{4} - \text{a} P2 p3 z2 + \text{g} p2 P3 z2 - \frac{1}{2} \text{ ii g} P3 z2^2 - \text{ii a} p3 z2 Z2 - \frac{z3}{4} - \text{a} p2 P2 z3 + \text{a} p3 P3 z3 + \text{ii a} P2 z2 z3 - \text{ii a} p2 Z2 z3 - \frac{1}{2} \text{ ii a} P3 z3^2 + \text{ii g} p2 z2 Z3 + \text{ii a} p3 z3 Z3 \right)$$

$$Out[\circ] = \frac{ \text{ii } p3}{2} + 2 \text{ a } P2 \text{ p3 } z2 - 2 \text{ g } p2 \text{ P3 } z2 + \text{ii } g \text{ P3 } z2^2 + 2 \text{ ii } a \text{ p3 } z2 \text{ Z2} + \frac{z3}{2} + 2 \text{ a } p2 \text{ P2 } z3 - 2 \text{ a } p3 \text{ P3 } z3 - 2 \text{ ii } a \text{ P2 } z2 \text{ z3} + 2 \text{ ii } a \text{ p2 } Z2 \text{ z3} + \text{ ii } a \text{ P3 } z3^2 - 2 \text{ ii } g \text{ p2 } z2 \text{ Z3} - 2 \text{ ii } a \text{ p3 } z3 \text{ Z3}$$

$$\begin{array}{lll} \textit{h(+)} & \textit{dz3} \ \textit{/} & \{ 22 \rightarrow z2st, \ z3 \rightarrow z3st, \ p2 \rightarrow p2st, \ p3 \rightarrow p3st, \ P2 \rightarrow P2st, \ P3 \rightarrow P3st \} \\ & z_3 \rightarrow z3st, \ p_2 \rightarrow p2st, \ p_3 \rightarrow p3st, \ P2 \rightarrow P2st, \ P3 \rightarrow P3st \} \\ & z_4 \left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ d2} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s - p33 \, s^3 \right) - \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ d2} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + p33 \, s^3 \right) - \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } 2 e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) + \\ & \frac{1}{4} \stackrel{i}{\text{i}} \left(\left(-\frac{1}{2} \stackrel{i}{\text{i}} \text{ d2} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z33 \right) - \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } 2 e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z33 \right) - \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ id } 2 e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c2} e^{-i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z33 \right) - \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c2} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c2} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) + \\ & z_4 \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c2} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c1} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c1} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \, z23 \right) \\ & \left(\left(\frac{1}{2} \stackrel{i}{\text{i}} \text{ c2} e^{i\,t} \left(-1 + e^{-i\,t} \right) + \frac{1}{2} \text{ c1} e^{i\,t} \left(1 + e^{-i\,t} \right) \right) s + s^3 \,$$

In[*]:= Expand [%394]

 $\frac{1}{9}$ i a d1² D1 s³ - $\frac{1}{4}$ a c1 C1 d2 s³ + $\frac{3}{4}$ i a C1 c2 d2 s³ - $\frac{1}{4}$ i a c1 C2 d2 s³ + $\frac{1}{4}$ a c2 C2 d2 s³ + $\frac{1}{4}$ a d1 D1 d2 s³ - $\frac{3}{2}$ i a D1 d2² s³ - $\frac{3}{2}$ a d1² D2 s³ + $\frac{1}{4}$ i a d1 d2 D2 s³ - $\frac{1}{2}$ a d2² D2 s³ - $\frac{1}{4}$ i a c1 C1 d1 e^{-it} s³ - $\frac{1}{4}$ a C1 c2 d1 e^{-it} s³ - $\frac{1}{4}$ a c1 C2 d1 e^{-it} s³ + $\frac{1}{4}$ i a c2 C2 d1 e^{-it} s³ + $\frac{1}{9}$ \pm a d1² D1 $e^{-i t}$ s³ - $\frac{1}{4}$ a c1 C1 d2 $e^{-i t}$ s³ + $\frac{1}{4}$ \pm a C1 c2 d2 $e^{-i t}$ s³ + $\frac{1}{4}$ \pm a c1 C2 d2 $e^{-i t}$ s³ + a c2 C2 d2 $e^{-i t} s^3 + \frac{1}{4}$ a d1 D1 d2 $e^{-i t} s^3 - \frac{1}{8} i$ a D1 d2² $e^{-i t} s^3 + \frac{1}{8}$ a d1² D2 $e^{-i t} s^3 - \frac{1}{8} i$ $\frac{1}{4} \text{ a c1 C2 d1 } e^{i \text{ t}} \text{ s}^3 + \frac{3}{4} \text{ i a c2 C2 d1 } e^{i \text{ t}} \text{ s}^3 - \frac{5}{2} \text{ i a d1}^2 \text{ D1 } e^{i \text{ t}} \text{ s}^3 - \frac{3}{4} \text{ a c1 C1 d2 } e^{i \text{ t}} \text{ s}^3 - \frac{1}{4} \text{ a c1 C1 d2 } e^{i \text{ t}} \text{ s}^3 - \frac{1}{4} \text{ a c1 C1 d2 } e^{i \text{ t}} \text{ s}^3 - \frac{1}{4} \text{ a c1 C1 d2 } e^{i \text{ t}} \text{ s}^3 - \frac{1}{4} \text{ a c1 C1 d2 } e^{i \text{ t}} \text{ c1 C1 d2 } e$ $\frac{1}{4}$ i a C1 c2 d2 e^{it} s³ + $\frac{3}{4}$ i a c1 C2 d2 e^{it} s³ - $\frac{5}{4}$ a c2 C2 d2 e^{it} s³ + $\frac{3}{4}$ a d1 D1 d2 e^{it} s³ + $\frac{1}{8} \pm a \, D1 \, d2^2 \, e^{i \, t} \, s^3 - \frac{1}{8} \, a \, d1^2 \, D2 \, e^{i \, t} \, s^3 - \frac{3}{4} \pm a \, d1 \, d2 \, D2 \, e^{i \, t} \, s^3 + \frac{5}{9} \, a \, d2^2 \, D2 \, e^{i \, t} \, s^3 + \frac{5}{9} \, a^2 \, d2^2 \, D2 \, e^{i \, t} \, d2^2 \, d2^2 \, D2 \, d2^2 \, d2^2 \, D2 \, d2^2 \, d2^2 \, D2 \, d2^2 \, d2^2 \, d2^2 \,$ $\frac{3}{4}$ i a c1 C1 d1 e^{2it} s³ - $\frac{3}{4}$ a C1 c2 d1 e^{2it} s³ - $\frac{3}{4}$ a c1 C2 d1 e^{2it} s³ - $\frac{3}{4}$ i a c2 C2 d1 e^{2it} s³ - $\frac{3}{9}$ i a d1² D1 $e^{2 \text{ i t}}$ s³ - $\frac{3}{4}$ a c1 C1 d2 $e^{2 \text{ i t}}$ s³ - $\frac{3}{4}$ i a C1 c2 d2 $e^{2 \text{ i t}}$ s³ - $\frac{3}{4}$ i a c1 C2 d2 $e^{2 \text{ i t}}$ s³ + $\frac{3}{4}$ a c2 C2 d2 e^{2it} s³ + $\frac{3}{4}$ a d1 D1 d2 e^{2it} s³ + $\frac{3}{9}$ i a D1 d2² e^{2it} s³ + $\frac{3}{9}$ a d1² D2 e^{2it} s³ + $\frac{3}{4}$ i a d1 d2 D2 $e^{2 \text{ i t}}$ s³ - $\frac{3}{6}$ a d2² D2 $e^{2 \text{ i t}}$ s³ - $\frac{1}{6}$ i c1² D1 g s³ + $\frac{1}{4}$ c1 c2 D1 g s³ - $\frac{3}{9} \pm c2^{2} D1 g s^{3} - \frac{3}{9} c1^{2} D2 g s^{3} + \frac{1}{4} \pm c1 c2 D2 g s^{3} - \frac{1}{9} c2^{2} D2 g s^{3} + \frac{1}{9} \pm c1^{2} D1 e^{-i + g} g s^{3} + \frac{1}{9} + \frac{1}{9} c2^{2} D2 g s^{3} + \frac{1}{9} c2^{2} D2 g s^{2} + \frac{1}{9} c2^{2} D2 g s^{3} + \frac{1}{9} c2^{2} D2 g s^{2} + \frac{$ $\frac{1}{4} \text{ c1 c2 D1 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{8} \text{ i c2}^2 \text{ D1 } \text{ e}^{-\text{i t}} \text{ g s}^3 + \frac{1}{8} \text{ c1}^2 \text{ D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ i c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1 c2 D2 } \text{ e}^{-\text{i t}} \text{ g s}^3 - \frac{1}{4} \text{ c1 c2 D2 } \text{ c2} \text{ c2 D2 } \text{ c2} \text{ c2$ $\frac{1}{2} \, \text{c2}^2 \, \text{D2} \, \text{e}^{-\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{5}{2} \, \text{i} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{3}{4} \, \text{c1} \, \text{c2} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{1}{2} \, \text{i} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{c2}^2 \, \text{D1} \, \text{c$ $\frac{1}{8}\,c\,1^{2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{4}\,\,\mathrm{i}\,\,c\,1\,\,c\,2\,\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{5}{8}\,c\,2^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,1\,\,\mathrm{e}^{\,2\,\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{1}{8}\,c\,2^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,1\,\,\mathrm{e}^{\,2\,\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{1}{8}\,c\,2^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,1\,\,\mathrm{e}^{\,2\,\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{1}{8}\,c\,2^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,1\,\,\mathrm{e}^{\,2\,\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{1}{8}\,c\,2^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{3}{8}\,\,\mathrm{e}^{\,2}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{i}\,\,c\,1^{\,2}\,D\,2\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,+\,\frac{3}{8}\,\,\mathrm{e}^{\,2}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}\,-\,\frac{3}{8}\,\,\mathrm{e}^{\,\mathrm{i}\,\,t}\,\,g\,\,s^{\,3}$ $\frac{3}{4} \text{ c1 c2 D1 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{2} \text{ i c2}^2 \text{ D1 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{2} \text{ c1}^2 \text{ D2 } \text{ e}^{2 \text{ it}} \text{ g s}^3 + \frac{3}{4} \text{ i c1 c2 D2 } \text{ e}^{2 \text{ it}} \text{ g s}^3 - \frac{3}{4} \text{ e}^2 \text{ c1}^2 \text{ c2} \text{ c2}$ $\frac{3}{9}$ c2² D2 e^{2 i t} g s³ - $\frac{p33 s^3}{2}$ - a C1 d1 p23 s⁵ - a C2 d2 p23 s⁵ - $\frac{1}{2}$ a C1 d1 e^{-i t} p23 s⁵ + $\frac{1}{2} \pm a \text{ C2 d1 } \text{ e}^{-i \text{ t}} \text{ p23 s}^5 + \frac{1}{2} \pm a \text{ C1 d2 } \text{ e}^{-i \text{ t}} \text{ p23 s}^5 + \frac{1}{2} \text{ a C2 d2 } \text{ e}^{-i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ p23 s}^5 - \frac{1}{2} \text{ a C1 d1 } \text{ e}^{i \text{ t}} \text{ e}^{i \text$ $\frac{1}{2}$ i a C2 d1 e^{i t} p23 s⁵ - $\frac{1}{2}$ i a C1 d2 e^{i t} p23 s⁵ + $\frac{1}{2}$ a C2 d2 e^{i t} p23 s⁵ + c1 D1 g p23 s⁵ + c2 D2 g p23 s⁵ + $\frac{1}{2}$ c1 D1 e^{-it} g p23 s⁵ - $\frac{1}{2}$ i c2 D1 e^{-it} g p23 s⁵ - $\frac{1}{2}$ i c1 D2 e^{-it} g p23 s⁵ - $\frac{1}{2} \text{ c2 D2 } \text{ e}^{-\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ c1 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ i c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ i c1 D2 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 - \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}} \text{ g p23 s}^5 + \frac{1}{2} \text{ or c2 D1 } \text{ e}^{\text{i t}}$ $\frac{1}{2}$ c2 D2 $e^{i t}$ g p23 s⁵ – a c1 C1 p33 s⁵ – a c2 C2 p33 s⁵ + a d1 D1 p33 s⁵ + a d2 D2 p33 s⁵ –

 $\frac{1}{2}$ a d1 D1 e^{-it} p33 $s^5 - \frac{1}{2}$ i a D1 d2 e^{-it} p33 $s^5 - \frac{1}{2}$ i a d1 D2 e^{-it} p33 $s^5 - \frac{1}{2}$ a d2 D2 e^{-it} p33 $s^5 - \frac{1}{2}$ $\frac{1}{2} \text{ a c1 C1 } \text{ e}^{\text{i t}} \text{ p33 } \text{ s}^{\text{5}} - \frac{1}{2} \text{ i a C1 c2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} - \frac{1}{2} \text{ i a c1 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ p33 s}^{\text{5}} +$ $\frac{1}{2}$ a d1 D1 $e^{i t}$ p33 s^5 + $\frac{1}{2}$ i a D1 d2 $e^{i t}$ p33 s^5 + $\frac{1}{2}$ i a d1 D2 $e^{i t}$ p33 s^5 - $\frac{1}{2}$ a d2 D2 $e^{i t}$ p33 s^5 + $ilde{\mathtt{i}}$ a C1 d1 s 5 z23 + a C2 d1 s 5 z23 - a C1 d2 s 5 z23 + $ilde{\mathtt{i}}$ a C2 d2 s 5 z23 + $ilde{\mathtt{i}}$ a C1 d1 $ilde{\mathtt{e}}^{ ilde{\mathtt{i}}}$ t s 5 z23 a C2 d1 $e^{i\,t}$ s⁵ z23 - a C1 d2 $e^{i\,t}$ s⁵ z23 - i a C2 d2 $e^{i\,t}$ s⁵ z23 - i c1 D1 g s⁵ z23 + c2 D1 g s⁵ z23 - ${\tt c1\,D2\,g\,s^5\,z23-i\,c2\,D2\,g\,s^5\,z23-i\,c1\,D1\,e^{i\,t}\,g\,s^5\,z23+c2\,D1\,e^{i\,t}\,g\,s^5\,z23+c1\,D2\,e^{i\,t}\,g\,s^5\,z23+c1\,D2\,e^{i\,t}\,g\,s^5\,z23+c2\,D1\,e^{i\,t}$ i c2 D2 $e^{i t}$ g s⁵ z23 + D1 g p23 s⁷ z23 + i D2 g p23 s⁷ z23 + D1 $e^{-i t}$ g p23 s⁷ z23 i D2 e^{-i} t g p23 s⁷ z23 – a C1 p33 s⁷ z23 – i a C2 p33 s⁷ z23 – a C1 e^{-i} t p33 s⁷ z23 + i a C2 $e^{-i t}$ p33 s⁷ z23 - $\frac{1}{2}$ i D1 g s⁷ z23² + $\frac{1}{2}$ D2 g s⁷ z23² - $\frac{1}{2}$ i D1 $e^{-i t}$ g s⁷ z23² - $\frac{1}{2} \text{ D2 e}^{-i \text{ t}} \text{ g s}^7 \text{ z23}^2 - \frac{1}{2} \text{ i a c1 d1 s}^5 \text{ Z23} - \frac{1}{2} \text{ a c2 d1 s}^5 \text{ Z23} - \frac{1}{2} \text{ a c1 d2 s}^5 \text{ Z23} + \frac{1}{2} \text{ c2 d1 s}^5 \text{ Z23} - \frac{1}{2} \text{ a c1 d2 s}^5 \text{ Z23} + \frac{1}{2} \text{ a c2 d1 s}^5 \text{ Z23} - \frac{1}{2} \text{ a c1 d2 s}^5 \text{ Z23} + \frac{1}{2} \text{ a c2 d1 s}^5 \text{ Z23} - \frac{1}{2} \text{ a c2 d2 d2 s}^5 \text{ Z23} + \frac{1}{2} \text{ a c2 d2 d$ $\frac{1}{2}\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{c}2\,\,\mathsf{d}2\,\,\mathsf{s}^5\,\,\mathsf{Z}23\,+\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{c}1\,\,\mathsf{d}1\,\,\mathsf{e}^{\dot{\mathtt{i}}\,\,\mathsf{t}}\,\,\mathsf{s}^5\,\,\mathsf{Z}23\,+\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{c}2\,\,\mathsf{d}2\,\,\mathsf{e}^{\dot{\mathtt{i}}\,\,\mathsf{t}}\,\,\mathsf{s}^5\,\,\mathsf{Z}23\,+\,\frac{3}{2}\,\,\dot{\mathtt{i}}\,\,\mathsf{a}\,\,\mathsf{c}1\,\,\mathsf{d}1\,\,\mathsf{e}^{2\,\,\dot{\mathtt{i}}\,\,\mathsf{t}}\,\,\mathsf{s}^5\,\,\mathsf{Z}23\,-\,23\,\,\mathsf{e}^{\dot{\mathtt{i}}\,\,\mathsf{c}}\,\,\mathsf{e}^{\dot{\mathtt{i}}\,\,\mathsf{e}}\,\,\mathsf{e}^{\dot{\mathtt{$ $\frac{3}{2}$ a c2 d1 $e^{2 i t}$ s⁵ Z23 - $\frac{3}{2}$ a c1 d2 $e^{2 i t}$ s⁵ Z23 - $\frac{3}{2}$ i a c2 d2 $e^{2 i t}$ s⁵ Z23 - a d1 p23 s⁷ Z23 + i a d2 p23 s 7 Z23 – a d1 e^i t p23 s 7 Z23 – i a d2 e^i t p23 s 7 Z23 – a c1 p33 s 7 Z23 + i a c2 p33 s⁷ Z23 - a c1 e^{it} p33 s⁷ Z23 - i a c2 e^{it} p33 s⁷ Z23 + 2 i a d1 e^{it} s⁷ z23 Z23 -2 a d2 $e^{i t}$ s⁷ z23 Z23 – 2 a p33 s⁹ z23 Z23 + $\frac{1}{2}$ i s³ z33 + i a c1 C1 s⁵ z33 – a C1 c2 s⁵ z33 + a c1 C2 s 5 z33 + i a c2 C2 s 5 z33 - i a d1 D1 s 5 z33 + a D1 d2 s 5 z33 - a d1 D2 s 5 z33 i a d2 D2 s^5 z33 + i a c1 C1 $e^{i t}$ s^5 z33 - a C1 c2 $e^{i t}$ s^5 z33 - a c1 C2 $e^{i t}$ s^5 z33 i a c2 C2 $e^{i t}$ s⁵ z33 – i a d1 D1 $e^{i t}$ s⁵ z33 + a D1 d2 $e^{i t}$ s⁵ z33 + a d1 D2 $e^{i t}$ s⁵ z33 + i a d2 D2 $e^{i t}$ s⁵ z33 - a C1 p23 s⁷ z33 - i a C2 p23 s⁷ z33 - a C1 $e^{-i t}$ p23 s⁷ z33 + i a C2 $e^{-i t}$ p23 s⁷ z33 + a D1 p33 s⁷ z33 + i a D2 p33 s⁷ z33 + a D1 $e^{-i t}$ p33 s⁷ z33 i a D2 $e^{-i t}$ p33 s⁷ z33 + i a C1 s⁷ z23 z33 - a C2 s⁷ z23 z33 + i a C1 $e^{-i t}$ s⁷ z23 z33 + a C2 e^{-it} s⁷ z23 z33 + 2 i a c1 e^{it} s⁷ Z23 z33 - 2 a c2 e^{it} s⁷ Z23 z33 - 2 a p23 s⁹ Z23 z33 + 2 i a s⁹ z23 Z23 z33 - $\frac{1}{2}$ i a D1 s⁷ z33² + $\frac{1}{2}$ a D2 s⁷ z33² - $\frac{1}{2}$ i a D1 e^{-i t} s⁷ z33² - $\frac{1}{2} \pm a \, d2^2 \, e^{i \, t} \, s^5 \, Z33 \, - \, \frac{3}{4} \pm a \, d1^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{2} \, a \, d1 \, d2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \, t} \, s^5 \, Z33 \, + \, \frac{3}{4} \pm a \, d2^2 \, e^{2 \, i \,$ $\frac{1}{4} \pm c1^2 \text{ g s}^5 \text{ Z}33 + \frac{1}{2} c1 c2 \text{ g s}^5 \text{ Z}33 - \frac{1}{4} \pm c2^2 \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{2} \pm c1^2 \text{ e}^{\text{i t}} \text{ g s}^5 \text{ Z}33 - \frac{1}{$ $\frac{1}{2} \pm c2^{2} e^{i t} g s^{5} Z33 - \frac{3}{4} \pm c1^{2} e^{2 i t} g s^{5} Z33 + \frac{3}{2} c1 c2 e^{2 i t} g s^{5} Z33 + \frac{3}{4} \pm c2^{2} e^{2} e^$ c1 g p23 s⁷ Z33 - i c2 g p23 s⁷ Z33 + c1 e^{it} g p23 s⁷ Z33 + i c2 e^{it} g p23 s⁷ Z33 + a d1 p33 s⁷ Z33 - i a d2 p33 s⁷ Z33 + a d1 e^{it} p33 s⁷ Z33 + i a d2 e^{it} p33 s⁷ Z33 - $2 \text{ i} \text{ c1} \text{ e}^{\text{i} \text{ t}} \text{ g s}^{\text{7}} \text{ z23 Z33} + 2 \text{ c2} \text{ e}^{\text{i} \text{ t}} \text{ g s}^{\text{7}} \text{ z23 Z33} + 2 \text{ g p23 s}^{\text{9}} \text{ z23 Z33} - \text{i} \text{ g s}^{\text{9}} \text{ z23}^{\text{2}} \text{ Z33} - \text{i} \text{ g s}^{\text{9}} \text{ z23}^{\text{9}} \text{ z33} - \text{i} \text{ g s}^{\text{9}} \text{ z23}^{\text{9}} \text{ z33} - \text{i} \text{ g s}^{\text{9}} \text{ z23}^{\text{9}} \text{ z33} - \text{i} \text{ g s}^{\text{9}} \text{ z33}^{\text{9}} \text{ z33}^{\text{9}} + \text{i} \text{ g s}^{\text{9}} \text{ z33}^{\text{9}} \text{ z33}^{\text{9}} + \text{i} \text{ g s}^{\text{9}} + \text{i} \text{g s}^{\text{9}} + \text{i$ $2 i a d1 e^{i t} s^{7} z33 Z33 + 2 a d2 e^{i t} s^{7} z33 Z33 + 2 a p33 s^{9} z33 Z33 - i a s^{9} z33^{2} Z33$

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$$\begin{aligned} & s^3 \left(\frac{1}{4} \text{ is a cl C 1 d 1} - \frac{1}{4} \text{ a cl C 2 d 1} + \frac{3}{4} \text{ a cl C 2 d 1} - \frac{1}{4} \text{ is a cl C 2 d 1} - \frac{1}{4} \text{ is a cl C 1 d 1} - \frac{1}{4} \text{ a cl C 2 d 2} + \frac{3}{4} \text{ a cl C 2 d 2} + \frac{1}{4} \text{ a cl C 2 d 2} - \frac{1}{4} \text{ is a d 1} \text{ 2 D 1} - \frac{1}{4} \text{ a cl C 1 d 2} + \frac{3}{4} \text{ a cl C 2 d 2} + \frac{1}{4} \text{ a cl C 2 d 2} + \frac{1}{4} \text{ a cl C 2 d 2} - \frac{1}{4} \text{ is a d 1 d 2 D 2} - \frac{3}{8} \text{ is a D 1 d 2}^2 - \frac{3}{8} \text{ a d 1}^2 \text{ D 2} + \frac{1}{4} \text{ is a cl C 2 d 2} + \frac{1}{4} \text{ a cl C 2 d 1} \text{ c}^{-1} \text{ t} - \frac{1}{4} \text{ a cl C 2 d 1} \text{ c}^{-1} \text{ t} + \frac{1}{4} \text{ is a d 1}^2 \text{ D 1 c}^{-1} \text{ t} + \frac{1}{4} \text{ a cl C 1 d 2} \text{ c}^{-1} \text{ t} + \frac{1}{4} \text{ is a cl C 2 d 2} \text{ c}^{-1} \text{ t} + \frac{1}{4} \text{ is a cl C 2 d 2} \text{ c}^{-1} \text{ t} + \frac{1}{4} \text{ a cl C 2 d 2} \text{ c}^{-1} \text{ t} +$$

 $\frac{1}{2}$ a c1 C1 e^{-it} p33 + $\frac{1}{2}$ i a C1 c2 e^{-it} p33 + $\frac{1}{2}$ i a c1 C2 e^{-it} p33 + $\frac{1}{2}$ a c2 C2 e^{-it} p33 + $\frac{1}{2}$ a d1 D1 e^{-it} p33 - $\frac{1}{2}$ i a D1 d2 e^{-it} p33 - $\frac{1}{2}$ i a d1 D2 e^{-it} p33 - $\frac{1}{2}$ a d2 D2 e^{-it} p33 - $\frac{1}{2}$ a c1 C1 $e^{i t}$ p33 - $\frac{1}{2}$ i a C1 c2 $e^{i t}$ p33 - $\frac{1}{2}$ i a c1 C2 $e^{i t}$ p33 + $\frac{1}{2}$ a c2 C2 $e^{i t}$ p33 + $\frac{1}{2}$ a d1 D1 $e^{i t}$ p33 + $\frac{1}{2}$ i a D1 d2 $e^{i t}$ p33 + $\frac{1}{2}$ i a d1 D2 $e^{i t}$ p33 - $\frac{1}{2}$ a d2 D2 $e^{i t}$ p33 + ${\dot{\mathbb{1}}}$ a C1 d1 z23 + a C2 d1 z23 - a C1 d2 z23 + ${\dot{\mathbb{1}}}$ a C2 d2 z23 + ${\dot{\mathbb{1}}}$ a C1 d1 ${\dot{\mathbb{C}}}^{{\dot{\mathbb{1}}}}$ z23 a C2 d1 $e^{i\,t}$ z23 - a C1 d2 $e^{i\,t}$ z23 - i a C2 d2 $e^{i\,t}$ z23 - i c1 D1 g z23 + c2 D1 g z23 c1 D2 g z23 – i c2 D2 g z23 – i c1 D1 $e^{i\ t}$ g z23 + c2 D1 $e^{i\ t}$ g z23 + c1 D2 $e^{i\ t}$ g z23 + i c2 D2 e^{it} g z23 - $\frac{1}{2}$ i a c1 d1 Z23 - $\frac{1}{2}$ a c2 d1 Z23 - $\frac{1}{2}$ a c1 d2 Z23 + $\frac{1}{2}$ i a c2 d2 Z23 + i a c1 d1 e^{it} Z23 + i a c2 d2 e^{it} Z23 + $\frac{3}{2}$ i a c1 d1 e^{2it} Z23 - $\frac{3}{2}$ a c2 d1 e^{2it} Z23 - $\frac{3}{2}$ a c1 d2 e^{2it} Z23 - $\frac{3}{2}$ i a c2 d2 e^{2it} Z23 + i a c1 C1 z33 - a C1 c2 z33 + a c1 C2 z33 + i a c2 C2 z33 – i a d1 D1 z33 + a D1 d2 z33 – a d1 D2 z33 – i a d2 D2 z33 + i a c1 C1 $e^{i\ t}$ z33 – a C1 c2 $e^{i\,t}$ z33 – a c1 C2 $e^{i\,t}$ z33 – i a c2 C2 $e^{i\,t}$ z33 – i a d1 D1 $e^{i\,t}$ z33 + a D1 d2 $e^{i\,t}$ z33 + a d1 D2 e^{it} z33 + i a d2 D2 e^{it} z33 + $\frac{1}{2}$ i a d1² Z33 + $\frac{1}{2}$ a d1 d2 Z33 - $\frac{1}{2}$ i a d2² Z33 - $\frac{1}{2} \pm a \, d1^2 \, e^{i \, t} \, Z33 \, - \, \frac{1}{2} \pm a \, d2^2 \, e^{i \, t} \, Z33 \, - \, \frac{3}{4} \pm a \, d1^2 \, e^{2 \, i \, t} \, Z33 \, + \, \frac{3}{2} \, a \, d1 \, d2 \, e^{2 \, i \, t} \, Z33 \, + \, \frac{3}{2} \, a$ $\frac{3}{4}$ i a d2² e^{2 i t} Z33 + $\frac{1}{4}$ i c1² g Z33 + $\frac{1}{2}$ c1 c2 g Z33 - $\frac{1}{4}$ i c2² g Z33 - $\frac{1}{2}$ i c1² e^{i t} g Z33 - $\frac{1}{2} \pm c2^{2} e^{i t} g Z33 - \frac{3}{4} \pm c1^{2} e^{2 i t} g Z33 + \frac{3}{2} c1 c2 e^{2 i t} g Z33 + \frac{3}{4} \pm c2^{2} e^{2 i t} g Z33 + \frac{3}{4} +$ s^7 D1 g p23 z23 + i D2 g p23 z23 + D1 e^{-it} g p23 z23 - i D2 e^{-it} g p23 z23 - a C1 p33 z23 i a C2 p33 z23 - a C1 e^{-it} p33 z23 + i a C2 e^{-it} p33 z23 - $\frac{1}{2}$ i D1 g z23² + $\frac{1}{2} D2 g z 23^{2} - \frac{1}{2} i D1 e^{-i t} g z 23^{2} - \frac{1}{2} D2 e^{-i t} g z 23^{2} - a d1 p 23 Z 23 + i a d2 p 23 Z 23 - a d 2 p 23 Z 23 + i a d 2 p 23 Z 23 - a d 2 p 23 Z 23 + i a d 2 p 23 Z 23 - a d 2 p 23 Z 23 + i a d 2 p 23 Z 23 + i a d 2 p 23 Z 23 - a d 2 p 23 Z 23 + i a d 2 p 23 Z 23 - a d 2 p 23 Z 23 + i a d$ a d1 $e^{i\,t}$ p23 Z23 – i a d2 $e^{i\,t}$ p23 Z23 – a c1 p33 Z23 + i a c2 p33 Z23 – a c1 $e^{i\,t}$ p33 Z23 – i a c2 e^{it} p33 Z23 + 2 i a d1 e^{it} z23 Z23 - 2 a d2 e^{it} z23 Z23 - a C1 p23 z33 i a C2 p23 z33 – a C1 $e^{-i\ t}$ p23 z33 + i a C2 $e^{-i\ t}$ p23 z33 + a D1 p33 z33 + i a D2 p33 z33 + a D1 e^{-i} ^t p33 z33 - i a D2 e^{-i} ^t p33 z33 + i a C1 z23 z33 - a C2 z23 z33 + i a C1 e^{-i} ^t z23 z33 + a C2 $e^{-i t}$ z23 z33 + 2 i a c1 $e^{i t}$ Z23 z33 - 2 a c2 $e^{i t}$ Z23 z33 - $\frac{1}{2}$ i a D1 z33² + $\frac{1}{2}$ a D2 z33² - $\frac{1}{2} \pm a \ D1 \ e^{-i \ t} \ z33^2 - \frac{1}{2} \ a \ D2 \ e^{-i \ t} \ z33^2 + c1 \ g \ p23 \ Z33 - \pm c2 \ g \ p23 \ Z33 + c1 \ e^{i \ t} \ g \ p23 \ Z33 + c1 \ e$ i c2 e^{it} g p23 Z33 + a d1 p33 Z33 - i a d2 p33 Z33 + a d1 e^{it} p33 Z33 + i a d2 e^{it} p33 Z33 -s⁹ (-2 a p33 z23 Z23 - 2 a p23 Z23 z33 + 2 <u>i</u> a z23 Z23 z33 + 2 g p23 z23 Z33 $igz23^2Z33 + 2ap33z33Z33 - iaz33^2Z33$

 $ln[*]:= dz3trunc := \left(\frac{1}{2} \pm d1 e^{\pm t} - \frac{1}{2} d2 e^{\pm t}\right) s +$ $\frac{3}{4}$ is a C1 c2 d2 - $\frac{1}{4}$ is a c1 C2 d2 + $\frac{1}{4}$ a c2 C2 d2 + $\frac{1}{4}$ a d1 D1 d2 - $\frac{3}{2}$ is a D1 d2² - $\frac{3}{8}$ a d1² D2 + $\frac{1}{4}$ i a d1 d2 D2 - $\frac{1}{8}$ a d2² D2 - $\frac{1}{4}$ i a c1 C1 d1 e^{-i t} - $\frac{1}{4}$ a C1 c2 d1 e^{-i t} - $\frac{1}{4}$ a c1 C2 d1 e^{-it} + $\frac{1}{4}$ i a c2 C2 d1 e^{-it} + $\frac{1}{2}$ i a d1² D1 e^{-it} - $\frac{1}{4}$ a c1 C1 d2 e^{-it} + $\frac{1}{4}$ i a C1 c2 d2 $e^{-it} + \frac{1}{4}$ i a c1 C2 d2 $e^{-it} + \frac{1}{4}$ a c2 C2 d2 $e^{-it} + \frac{1}{4}$ a d1 D1 d2 $e^{-it} - \frac{1}{4}$ $\frac{1}{9}$ \pm a D1 d2² $e^{-i \cdot t}$ + $\frac{1}{9}$ a d1² D2 $e^{-i \cdot t}$ - $\frac{1}{4}$ \pm a d1 d2 D2 $e^{-i \cdot t}$ - $\frac{1}{9}$ a d2² D2 $e^{-i \cdot t}$ + $\frac{5}{4}$ i a c1 C1 d1 e^{it} - $\frac{3}{4}$ a C1 c2 d1 e^{it} + $\frac{1}{4}$ a c1 C2 d1 e^{it} + $\frac{3}{4}$ i a c2 C2 d1 e^{it} - $\frac{5}{9}$ i a d1² D1 e^{i t} - $\frac{3}{4}$ a c1 C1 d2 e^{i t} - $\frac{1}{4}$ i a C1 c2 d2 e^{i t} + $\frac{3}{4}$ i a c1 C2 d2 e^{i t} - $\frac{5}{4}$ a c2 C2 d2 $e^{it} + \frac{3}{4}$ a d1 D1 d2 $e^{it} + \frac{1}{2}$ i a D1 d2² $e^{it} - \frac{1}{2}$ a d1² D2 $e^{it} - \frac{3}{4}$ i a d1 d2 D2 $e^{it} + \frac{3}{4}$ $\frac{5}{2}$ a d2² D2 e^{it} + $\frac{3}{2}$ i a c1 C1 d1 e^{2 it} - $\frac{3}{2}$ a C1 c2 d1 e^{2 it} - $\frac{3}{2}$ a c1 C2 d1 e^{2 it} - $\frac{3}{1}$ i a c2 C2 d1 e^{2it} - $\frac{3}{2}$ i a d1² D1 e^{2it} - $\frac{3}{4}$ a c1 C1 d2 e^{2it} - $\frac{3}{4}$ i a C1 c2 d2 e^{2it} - $\frac{3}{2}$ a d1² D2 e^{2 i t} + $\frac{3}{4}$ i a d1 d2 D2 e^{2 i t} - $\frac{3}{2}$ a d2² D2 e^{2 i t} - $\frac{1}{2}$ i c1² D1 g + $\frac{1}{4}$ c1 c2 D1 g - $\frac{3}{9}$ i c2² D1 g - $\frac{3}{9}$ c1² D2 g + $\frac{1}{4}$ i c1 c2 D2 g - $\frac{1}{9}$ c2² D2 g + $\frac{1}{9}$ i c1² D1 e^{-i t} g + $\frac{1}{4} \text{ c1 c2 D1 } e^{-i t} g - \frac{1}{2} i \text{ c2}^2 \text{ D1 } e^{-i t} g + \frac{1}{2} \text{ c1}^2 \text{ D2 } e^{-i t} g - \frac{1}{4} i \text{ c1 c2 D2 } e^{-i t} g - \frac{1}{4}$ $\frac{1}{9} c2^{2} D2 e^{-it} g - \frac{5}{9} i c1^{2} D1 e^{it} g + \frac{3}{4} c1 c2 D1 e^{it} g + \frac{1}{9} i c2^{2} D1 e^{it} g - \frac{1}{9} c1^{2} D2 e^{it} g - \frac{1}{9} c1$ $\frac{3}{1} \pm c1 \, c2 \, D2 \, e^{it} \, g + \frac{5}{2} \, c2^{2} \, D2 \, e^{it} \, g - \frac{3}{2} \pm c1^{2} \, D1 \, e^{2it} \, g + \frac{3}{4} \, c1 \, c2 \, D1 \, e^{2it} \, g +$ $\frac{3}{9} \pm c2^{2} D1 e^{2 \pm t} g + \frac{3}{9} c1^{2} D2 e^{2 \pm t} g + \frac{3}{4} \pm c1 c2 D2 e^{2 \pm t} g - \frac{3}{9} c2^{2} D2 e^{2 \pm t} g - \frac{p33}{2} + \frac{\pm z33}{2}$ $ln[\circ]:= dp3 /. \{z2 \rightarrow z2st, z3 \rightarrow z3st, Z2 \rightarrow Z2st,$ Z3 → Z3st, p2 → p2st, p3 → p3st, P2 → P2st, P3 → P3st} $Out[*] = -2 \left(-\frac{1}{4} i \left(\left(\frac{1}{2} i d1 e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} d2 e^{it} \left(1 + e^{-it} \right) \right) s + p33 s^3 \right) - \frac{1}{2} d2 e^{it} \left(1 + e^{-it} \right) \right) s + p33 s^3 \right) - \frac{1}{2} d2 e^{it} \left(1 + e^{-it} \right) d2 e^{it} d2$ $a\left(\left(-\frac{1}{2} i C1 e^{-it} \left(-1+e^{it}\right)+\frac{1}{2} C2 e^{-it} \left(1+e^{it}\right)\right) s + P23 s^3\right)$ $\left(\left(\frac{1}{2} i d1 e^{it} \left(-1 + e^{-it} \right) + \frac{1}{2} d2 e^{it} \left(1 + e^{-it} \right) \right) s + p33 s^3 \right)$

$$\begin{split} &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+s^3\,z23\right)+\\ &g\left(\left(\frac{1}{2}\text{ i }c1\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p23\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }D1\,e^{-i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,D2\,e^{-i\,t}\left(1+e^{i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }D1\,e^{-i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+s^3\,z23\right)+\frac{1}{4}\left(-\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+s^3\,z23\right)\\ &\left(\left(-\frac{1}{2}\text{ i }c1\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,c2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p23\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,d2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d1\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,d2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{-i\,t}\right)+\frac{1}{2}\,d2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,d2\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,d1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,d1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,d1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s^3\right)\\ &\left(\left(-\frac{1}{2}\text{ i }d2\,e^{i\,t}\left(-1+e^{i\,t}\right)+\frac{1}{2}\,c1\,e^{i\,t}\left(1+e^{-i\,t}\right)\right)\,s+p33\,s$$

$$\begin{split} & \text{i} \text{ g } \left(\left(\frac{1}{2} \text{ i} \text{ c1 } \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{ e}^{-\text{i} \text{ t}} \right) + \frac{1}{2} \text{ c2 } \text{ e}^{\text{i} \text{ t}} \left(1 + \text{ e}^{-\text{i} \text{ t}} \right) \right) \text{ s} + \text{p23 } \text{s}^3 \right) \\ & \left(\left(-\frac{1}{2} \text{ i} \text{ c2 } \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{ e}^{-\text{i} \text{ t}} \right) + \frac{1}{2} \text{ c1 } \text{ e}^{\text{i} \text{ t}} \left(1 + \text{ e}^{-\text{i} \text{ t}} \right) \right) \text{ s} + \text{s}^3 \text{ z23} \right) \\ & \left(\left(\frac{D1}{2} + \frac{\text{i} \text{ D2}}{2} + \frac{1}{2} \text{ D1 } \text{ e}^{-\text{i} \text{ t}} - \frac{1}{2} \text{ i} \text{ D2 } \text{ e}^{-\text{i} \text{ t}} \right) \text{ s} + \text{s}^3 \text{ Z33} \right) + \\ & \text{i} \text{ a} \left(\left(\frac{1}{2} \text{ i} \text{ d1 } \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{ e}^{-\text{i} \text{ t}} \right) \right) + \frac{1}{2} \text{ d2 } \text{ e}^{\text{i} \text{ t}} \left(1 + \text{ e}^{-\text{i} \text{ t}} \right) \right) \text{ s} + \text{p33 } \text{ s}^3 \right) \\ & \left(\left(-\frac{1}{2} \text{ i} \text{ d2 } \text{ e}^{\text{i} \text{ t}} \left(-1 + \text{ e}^{-\text{i} \text{ t}} \right) + \frac{1}{2} \text{ d1 } \text{ e}^{\text{i} \text{ t}} \left(1 + \text{ e}^{-\text{i} \text{ t}} \right) \right) \text{ s} + \text{s}^3 \text{ z33} \right) \\ & \left(\left(\frac{D1}{2} + \frac{\text{i} \text{ D2}}{2} + \frac{1}{2} \text{ D1 } \text{ e}^{-\text{i} \text{ t}} - \frac{1}{2} \text{ i} \text{ D2 } \text{ e}^{-\text{i} \text{ t}} \right) \text{ s} + \text{s}^3 \text{ Z33} \right) \right) \end{split}$$

In[*]:= Expand [%398]

 $Out[*] = \frac{1}{2} d1 e^{it} s + \frac{1}{2} i d2 e^{it} s + \frac{1}{4} a c1 C1 d1 s^3 + \frac{1}{4} i a C1 c2 d1 s^3 - \frac{3}{4} i a c1 C2 d1 s^3 - \frac{1}{4} a c2 C2 d1 s^3 - \frac{1}{4} a$ $\frac{1}{9}$ a d1² D1 s³ + $\frac{1}{4}$ i a c1 C1 d2 s³ + $\frac{3}{4}$ a C1 c2 d2 s³ - $\frac{1}{4}$ a c1 C2 d2 s³ - $\frac{1}{4}$ i a c2 C2 d2 s³ - $\frac{1}{4} \pm a \ d1 \ D1 \ d2 \ s^3 - \frac{3}{6} \pm a \ D1 \ d2^2 \ s^3 + \frac{3}{6} \pm a \ d1^2 \ D2 \ s^3 + \frac{1}{4} \ a \ d1 \ d2 \ D2 \ s^3 + \frac{1}{6} \pm a \ d2^2 \ D2 \ s^3 - \frac{1}{6} \pm a \ d2^2 \ D$ $\frac{3}{4}$ a c1 C1 d1 $e^{-i t}$ s³ + $\frac{3}{4}$ i a C1 c2 d1 $e^{-i t}$ s³ + $\frac{3}{4}$ i a c1 C2 d1 $e^{-i t}$ s³ + $\frac{3}{4}$ a c2 C2 d1 $e^{-i t}$ s³ + $\frac{3}{8} \text{ a d1}^2 \text{ D1 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ i a c1 C1 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a C1 c2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 - \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 - \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 - \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 - \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4} \text{ a c1 C2 d2 } \text{ e}^{-\text{i t}} \text{ s}^3 + \frac{3}{4}$ $\frac{3}{4} \pm a \ c2 \ C2 \ d2 \ e^{-i \ t} \ s^3 - \frac{3}{4} \pm a \ d1 \ D1 \ d2 \ e^{-i \ t} \ s^3 - \frac{3}{6} \ a \ D1 \ d2^2 \ e^{-i \ t} \ s^3 - \frac{3}{6} \pm a \ d1^2 \ D2 \ e^{-i \ t} \ s^3 - \frac{3}{6} = \frac{3}{6} \pm a \ d1^2 \ D2 \ e^{-i \ t} \ s^3 - \frac{3}{6} = \frac{3$ $\frac{3}{4}$ a d1 d2 D2 e^{-it} s³ + $\frac{3}{8}$ i a d2² D2 e^{-it} s³ + $\frac{3}{4}$ a c1 C1 d1 e^{it} s³ + $\frac{5}{4}$ i a C1 c2 d1 e^{it} s³ - $\frac{7}{4}$ i a c1 C2 d1 e^{i t} s³ + $\frac{5}{4}$ a c2 C2 d1 e^{i t} s³ - $\frac{3}{9}$ a d1² D1 e^{i t} s³ + $\frac{5}{4}$ i a c1 C1 d2 e^{i t} s³ - $\frac{7}{4}$ a C1 c2 d2 e^{it} s³ + $\frac{5}{4}$ a c1 C2 d2 e^{it} s³ + $\frac{3}{4}$ ii a c2 C2 d2 e^{it} s³ - $\frac{5}{4}$ ii a d1 D1 d2 e^{it} s³ + $\frac{7}{8}$ a D1 d2 2 $e^{i\,t}$ s^3 + $\frac{7}{8}$ i a d1 2 D2 $e^{i\,t}$ s^3 - $\frac{5}{4}$ a d1 d2 D2 $e^{i\,t}$ s^3 - $\frac{3}{8}$ i a d2 2 D2 $e^{i\,t}$ s^3 - $\frac{1}{4}$ a c1 C1 d1 e^{2it} s³ - $\frac{1}{4}$ i a C1 c2 d1 e^{2it} s³ - $\frac{1}{4}$ i a c1 C2 d1 e^{2it} s³ + $\frac{1}{4}$ a c2 C2 d1 e^{2it} s³ + $\frac{1}{8} \text{ a d1}^2 \text{ D1 } \text{ e}^{2 \text{ i t}} \text{ s}^3 - \frac{1}{4} \text{ i a c1 C1 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a C1 c2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ e}^{2 \text{ i t}} \text{ s}^3 + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} \text{ e}$ $\frac{1}{4}$ i a c2 C2 d2 $e^{2 i t}$ s³ + $\frac{1}{4}$ i a d1 D1 d2 $e^{2 i t}$ s³ - $\frac{1}{8}$ a D1 d2² $e^{2 i t}$ s³ + $\frac{1}{9}$ i a d1² D2 $e^{2 i t}$ s³ - $\frac{3}{9} \pm c1^{2} D2 g s^{3} + \frac{1}{4} c1 c2 D2 g s^{3} + \frac{1}{9} \pm c2^{2} D2 g s^{3} + \frac{3}{9} c1^{2} D1 e^{-i t} g s^{3} - \frac{3}{4} \pm c1 c2 D1 e^{-i t} g s^{3} - \frac{3}{4} + \frac{1}{4} c1 c2 D1 e^{-i t} g s^{4} - \frac{1}{4} c1 c1 c2 D1 e^{-i t} g s^{4} - \frac{1}{4} c1 c1 c2 D1 e^{-i t} g s^{4} - \frac{1}{4} c1 c1 c2 D1$ $\frac{3}{9} c2^{2} D1 e^{-i t} g s^{3} - \frac{3}{9} i c1^{2} D2 e^{-i t} g s^{3} - \frac{3}{4} c1 c2 D2 e^{-i t} g s^{3} + \frac{3}{9} i c2^{2} D2 e^{-i t} g s^{3} - \frac{3}{4} c1 c2 D2 e^{-i t} g s^{3} + \frac{3}{9} i c2^{2} D2 e^{-i t} g s^{3} - \frac{3}{4} c1 c2 D2 e^{-i t} g s^{3} + \frac{3}{9} i c2^{2} D2 e^{-i t} g s^{3} - \frac{3}{4} c1 c2 D2 e^{-i t} g s^{3} + \frac{3}{9} i c2^{2} D2 e^{-i t} g s^{3} - \frac{3}{9} i c2^{2} D2 e^{-i t} g$

 $\frac{5}{4} \text{ c1 c2 D2 } e^{\text{i} \text{ t}} \text{ g s}^3 - \frac{3}{9} \text{ i c2}^2 \text{ D2 } e^{\text{i} \text{ t}} \text{ g s}^3 + \frac{1}{9} \text{ c1}^2 \text{ D1 } e^{2 \text{ i} \text{ t}} \text{ g s}^3 + \frac{1}{4} \text{ i c1 c2 D1 } e^{2 \text{ i} \text{ t}} \text{ g s}^3 - \frac{1}{9} \text{ c1}^2 \text{ D1 } e^{2 \text{ i} \text{ t}} \text{ g s}^3 + \frac{1}{9} \text{ c1}^2 \text{ C1}^2 \text{ C2 D1 } e^{2 \text{ i} \text{ t}} \text{ g s}^3 - \frac{1}{9} \text{ c1}^2 \text{ C1}^2 \text{ C2 D1 } e^{2 \text{ i} \text{ t}} \text{ g s}^3 + \frac{1}{9} \text{ c1}^2 \text{ C1}^2 \text{ C1}^2 \text{ C2 D1} e^{2 \text{ i} \text{ t}} \text{ g s}^3 - \frac{1}{9} \text{ c1}^2 \text{$ $\frac{1}{2} \, \text{c2}^2 \, \text{D1} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{1}{2} \, \text{i} \, \text{c1}^2 \, \text{D2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{4} \, \text{c1} \, \text{c2} \, \text{D2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{i} \, \text{c2}^2 \, \text{D2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, + \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i} \, \text{t}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i}} \, \text{e}^{2 \, \text{i}} \, \text{g} \, \text{s}^3 \, - \, \frac{1}{2} \, \text{e}^{2 \, \text{i}} \, \text{e}^{2 \, \text{i}} \, \text{e}^{2 \, \text{i}} \, \text{g} \, \text{e}^{2 \, \text{i}} \, \text{e}^{2 \, \text{i$ $\frac{1}{2}$ <u>i</u> p33 s³ + <u>i</u> a C1 d1 p23 s⁵ + a C2 d1 p23 s⁵ – a C1 d2 p23 s⁵ + <u>i</u> a C2 d2 p23 s⁵ + i a C1 d1 e^{-it} p23 s⁵ + a C2 d1 e^{-it} p23 s⁵ + a C1 d2 e^{-it} p23 s⁵ – i a C2 d2 e^{-it} p23 s⁵ – i c1 D1 g p23 s⁵ + c2 D1 g p23 s⁵ - c1 D2 g p23 s⁵ - i c2 D2 g p23 s⁵ - i c1 D1 $e^{-i t}$ g p23 s⁵ c2 D1 $e^{-i t}$ g p23 s⁵ - c1 D2 $e^{-i t}$ g p23 s⁵ + i c2 D2 $e^{-i t}$ g p23 s⁵ + i a c1 d1 P23 s⁵ + $\frac{1}{2}$ a c2 d1 P23 s⁵ + $\frac{1}{2}$ a c1 d2 P23 s⁵ - $\frac{1}{2}$ i a c2 d2 P23 s⁵ - i a c1 d1 $e^{i t}$ P23 s⁵ $i \ a \ c2 \ d2 \ e^{i \ t} \ P23 \ s^5 - \frac{3}{2} \ i \ a \ c1 \ d1 \ e^{2 \ i \ t} \ P23 \ s^5 + \frac{3}{2} \ a \ c2 \ d1 \ e^{2 \ i \ t} \ P23 \ s^5 + \frac{3}{2} \ a \ c1 \ d2 \ e^{2 \ i \ t} \ e^{2$ $\frac{3}{2}$ \pm a c2 d2 $e^{2\pm t}$ P23 s⁵ + \pm a c1 C1 p33 s⁵ - a C1 c2 p33 s⁵ + a c1 C2 p33 s⁵ + \pm a c2 C2 p33 s⁵ i a d1 D1 p33 s⁵ + a D1 d2 p33 s⁵ - a d1 D2 p33 s⁵ - i a d2 D2 p33 s⁵ + i a c1 C1 $e^{-i t}$ p33 s⁵ + a C1 c2 $e^{-i\ t}$ p33 s⁵ + a c1 C2 $e^{-i\ t}$ p33 s⁵ – i a c2 C2 $e^{-i\ t}$ p33 s⁵ – i a d1 D1 $e^{-i\ t}$ p33 s⁵ – a D1 d2 e^{-it} p33 s⁵ – a d1 D2 e^{-it} p33 s⁵ + i a d2 D2 e^{-it} p33 s⁵ – $\frac{1}{i}$ i a d1² P33 s⁵ – $\frac{1}{2}$ a d1 d2 P33 s⁵ + $\frac{1}{4}$ i a d2² P33 s⁵ + $\frac{1}{2}$ i a d1² e^{i t} P33 s⁵ + $\frac{1}{2}$ i a d2² e^{i t} P33 s⁵ + $\frac{3}{4} \pm a \, d1^2 \, e^{2 \pm t} \, P33 \, s^5 - \frac{3}{2} \, a \, d1 \, d2 \, e^{2 \pm t} \, P33 \, s^5 - \frac{3}{4} \pm a \, d2^2 \, e^{2 \pm t} \, P33 \, s^5 - \frac{1}{4} \pm c1^2 \, g \, P33$ $\frac{1}{2} \text{ c1 c2 g P33 s}^5 + \frac{1}{4} \text{ i c2}^2 \text{ g P33 s}^5 + \frac{1}{2} \text{ i c1}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ i c2}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ order}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ order}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ order}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ order}^2 \text{ e}^{\text{i t}} \text{ g P33 s}^5 + \frac{1}{2} \text{ order}^2 \text{ order}^2$ $\frac{3}{4} \pm c1^{2} e^{2 \pm t} g P33 s^{5} - \frac{3}{2} c1 c2 e^{2 \pm t} g P33 s^{5} - \frac{3}{4} \pm c2^{2} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{5} + a d1 p23 P23 s^{7} - \frac{3}{4} e^{2 \pm t} g P33 s^{7} - \frac{3}{4$ i a d2 p23 P23 s⁷ + a d1 $e^{i t}$ p23 P23 s⁷ + i a d2 $e^{i t}$ p23 P23 s⁷ + a c1 P23 p33 s⁷ i a c2 P23 p33 s⁷ + a c1 $e^{i t}$ P23 p33 s⁷ + i a c2 $e^{i t}$ P23 p33 s⁷ - c1 g p23 P33 s⁷ + i c2 g p23 P33 s⁷ - c1 e^{it} g p23 P33 s⁷ - i c2 e^{it} g p23 P33 s⁷ - a d1 p33 P33 s⁷ + i a d2 p33 P33 s⁷ - a d1 $e^{i t}$ p33 P33 s⁷ - i a d2 $e^{i t}$ p33 P33 s⁷ + a C1 d1 s⁵ z23 - 2 i a C2 d1 s⁵ z23 + 2 <u>i</u> a C1 d2 s⁵ z23 + a C2 d2 s⁵ z23 - $\frac{1}{2}$ a C1 d1 $e^{-i t}$ s⁵ z23 + $\frac{1}{2}$ <u>i</u> a C2 d1 $e^{-i t}$ s⁵ z23 + $\frac{1}{2}$ i a C1 d2 e^{-it} s⁵ z23 + $\frac{1}{2}$ a C2 d2 e^{-it} s⁵ z23 - $\frac{1}{2}$ a C1 d1 e^{it} s⁵ z23 - $\frac{1}{2}$ i a C2 d1 e^{it} s⁵ z23 - $\frac{1}{2}$ i a C1 d2 e^{i t} s⁵ z23 + $\frac{1}{2}$ a C2 d2 e^{i t} s⁵ z23 - c1 D1 g s⁵ z23 - 2 i c2 D1 g s⁵ z23 + 2 i c1 D2 g s⁵ z23 - c2 D2 g s⁵ z23 + $\frac{1}{2}$ c1 D1 e^{-it} g s⁵ z23 - $\frac{1}{2}$ i c2 D1 e^{-it} g s⁵ z23 - $\frac{1}{2} \pm \text{c1 D2 } e^{-\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} - \frac{1}{2} \pm \text{c2 D2 } e^{-\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c1 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i} \, \text{t}} \text{ g s}^5 \text{ z23} + \frac{1}{2} \pm \text{c2 D1 } e^{\text{i$ $\frac{1}{2} \pm c1 \, D2 \, e^{i \, t} \, g \, s^5 \, z23 \, - \, \frac{1}{2} \, c2 \, D2 \, e^{i \, t} \, g \, s^5 \, z23 \, - \, 2 \, \pm \, D1 \, e^{-i \, t} \, g \, p23 \, s^7 \, z23 \, - \, 2 \, D2 \, e^{-i \,$ 2 i a d1 $e^{i t}$ P23 s^{7} z23 + 2 a d2 $e^{i t}$ P23 s^{7} z23 + 2 i a C1 $e^{-i t}$ p33 s^{7} z23 + 2 a C2 $e^{-i t}$ p33 s^{7} z23 + $2 i c1 e^{it} g P33 s^7 z23 - 2 c2 e^{it} g P33 s^7 z23 + 2 a P23 p33 s^9 z23 - 2 g p23 P33 s^9 z23 +$ $\frac{1}{2}\; \text{D1 g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{i}\; \; \text{D2 g s}^7\; \text{z23}^2 \; - \; \frac{1}{2}\; \text{D1 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{i}\; \; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{i}\; \; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{i}\; \; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{i}\; \; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{g s}^7\; \text{z23}^2 \; + \; \frac{1}{2}\; \text{D2 e}^{-\text{i}\; \text{t}}\; \text{D2 e}^{-\text{i}\; \text{D2 e}^{-\text{$

 $i g P33 s^9 z23^2 - a c1 d1 s^5 Z23 + i a c2 d1 s^5 Z23 + i a c1 d2 s^5 Z23 + a c2 d2 s^5 Z23 +$ a c1 d1 e^{2it} s⁵ Z23 + i a c2 d1 e^{2it} s⁵ Z23 + i a c1 d2 e^{2it} s⁵ Z23 - a c2 d2 e^{2it} s⁵ Z23 + i a d1 p23 s⁷ Z23 + a d2 p23 s⁷ Z23 + i a d1 e^{i} t p23 s⁷ Z23 - a d2 e^{i} t p23 s⁷ Z23 + i a c1 p33 s⁷ Z23 + a c2 p33 s⁷ Z23 + i a c1 $e^{i t}$ p33 s⁷ Z23 - a c2 $e^{i t}$ p33 s⁷ Z23 a d1 s 7 z23 Z23 + i a d2 s 7 z23 Z23 + a d1 $e^{i t}$ s 7 z23 Z23 + i a d2 $e^{i t}$ s 7 z23 Z23 + $2 \text{ i} \text{ a p33 s}^9 \text{ z23 Z23} + \frac{\text{s}^3 \text{ z33}}{2} + \text{a c1 C1 s}^5 \text{ z33} + 2 \text{ i} \text{ a C1 c2 s}^5 \text{ z33} - 2 \text{ i} \text{ a c1 C2 s}^5 \text{ z33} +$ $\frac{1}{2} \text{ a c1 C1 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ i a C1 c2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ i a c1 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{-\text{i t}} \text{ s}^5 \text{ z33} + \frac{1}{$ $\frac{1}{2} \text{ a d1 D1 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ i a D1 d2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ i a d1 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a d2 D2 } e^{-i \text{ t}} \text{ s}^5 \text{ z33} - \frac{1}{2} \text{ a$ $\frac{1}{2} \text{ a c1 C1 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} - \frac{1}{2} \text{ i a C1 c2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} - \frac{1}{2} \text{ i a c1 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ z33} + \frac{1}{2} \text{ a c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ c33} + \frac{1}{2} \text{ c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ c33} + \frac{1}{2} \text{ c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ c33} + \frac{1}{2} \text{ c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ c33} + \frac{1}{2} \text{ c2 C2 } \text{ e}^{\text{i t}} \text{ s}^{\text{5}} \text{ c33} + \frac{1}{2} \text{ c2 C2 } \text{ e}^{\text{i t}} \text{ c3} + \frac{1}{2} \text{ c3} \text{ c4} + \frac{1}{2} \text{ c4} + \frac{1}{2$ $\frac{1}{2}$ a d1 D1 $e^{i t}$ s⁵ z33 + $\frac{1}{2}$ i a D1 d2 $e^{i t}$ s⁵ z33 + $\frac{1}{2}$ i a d1 D2 $e^{i t}$ s⁵ z33 - $\frac{1}{2}$ a d2 D2 $e^{i t}$ s⁵ z33 + $2 i a C1 e^{-i t} p23 s^7 z33 + 2 a C2 e^{-i t} p23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 i a C1 e^{i t} P23 s^7 z33 + 2 a C2 e^{i t} P23 s^7 z33 - 2 a C2 e^{i t} P23 s^7 z33 + 2 a C2 e^{i$ 2 $\dot{\text{a}}$ a D1 e^{-i} t p33 s⁷ z33 - 2 a D2 e^{-i} t p33 s⁷ z33 + 2 $\dot{\text{a}}$ a d1 e^{i} t P33 s⁷ z33 - 2 a d2 e^{i} t P33 s⁷ z33 + 2 a p23 P23 s 9 z33 – 2 a p33 P33 s 9 z33 – a C1 s 7 z23 z33 – i a C2 s 7 z23 z33 + a C1 e^{-it} s⁷ z23 z33 - i a C2 e^{-it} s⁷ z23 z33 - 2 i a P23 s⁹ z23 z33 - a c1 s⁷ Z23 z33 + i a c2 s⁷ Z23 z33 + a c1 $e^{i t}$ s⁷ Z23 z33 + i a c2 $e^{i t}$ s⁷ Z23 z33 + 2 i a p23 s⁹ Z23 z33 + $\frac{1}{2}$ a D1 s⁷ z33² + $\frac{1}{2}$ i a D2 s⁷ z33² - $\frac{1}{2}$ a D1 e^{-it} s⁷ z33² + $\frac{1}{2}$ i a D2 e^{-it} s⁷ z33² + i a d1 d2 e^{2it} s⁵ Z33 + $\frac{1}{2}$ a d2² e^{2it} s⁵ Z33 + $\frac{1}{2}$ c1² g s⁵ Z33 - i c1 c2 g s⁵ Z33 - $\frac{1}{2}$ c2² g s⁵ Z33 -c2 g p23 s⁷ Z33 - i c1 e^{it} g p23 s⁷ Z33 + c2 e^{it} g p23 s⁷ Z33 - i a d1 p33 s⁷ Z33 - a d2 p33 s⁷ Z33 i a d1 e^{it} p33 s⁷ Z33 + a d2 e^{it} p33 s⁷ Z33 + c1 g s⁷ z23 Z33 - i c2 g s⁷ z23 Z33 c1 $e^{i t}$ g s⁷ z23 Z33 - i c2 $e^{i t}$ g s⁷ z23 Z33 - 2 i g p23 s⁹ z23 Z33 + a d1 s⁷ z33 Z33 i a d2 s⁷ z33 Z33 – a d1 $e^{i t}$ s⁷ z33 Z33 – i a d2 $e^{i t}$ s⁷ z33 Z33 – 2 i a p33 s⁹ z33 Z33

In[*]:= Collect[%, s]

$$\begin{aligned} & \text{Out}(*) = \left(\frac{1}{2} \text{ d1 } \text{ e}^{\text{i} \text{ t}} + \frac{1}{2} \text{ ii } \text{ d2 } \text{ e}^{\text{i} \text{ t}}\right) \text{ s} + \\ & \text{s}^3 \left(\frac{1}{4} \text{ a } \text{ c1 } \text{ C1 } \text{ d1} + \frac{1}{4} \text{ ii } \text{ a } \text{ C1 } \text{ c2 } \text{ d1} - \frac{3}{4} \text{ ii } \text{ a } \text{ c1 } \text{ C2 } \text{ d1} - \frac{1}{4} \text{ a } \text{ c2 } \text{ C2 } \text{ d1} - \frac{1}{8} \text{ a } \text{ d1}^2 \text{ D1} + \frac{1}{4} \text{ ii } \text{ a } \text{ c1 } \text{ C1 } \text{ d2} + \\ & \frac{3}{4} \text{ a } \text{ C1 } \text{ c2 } \text{ d2} - \frac{1}{4} \text{ a } \text{ c1 } \text{ C2 } \text{ d2} - \frac{1}{4} \text{ ii } \text{ a } \text{ c2 } \text{ C2 } \text{ d2} - \frac{1}{4} \text{ ii } \text{ a } \text{ d1 } \text{ D1 } \text{ d2} - \frac{3}{8} \text{ a } \text{ D1 } \text{ d2}^2 + \frac{3}{8} \text{ ii } \text{ a } \text{ d1}^2 \text{ D2} + \\ & \frac{1}{4} \text{ a } \text{ d1 } \text{ d2 } \text{ D2} + \frac{1}{8} \text{ ii } \text{ a } \text{ d2}^2 \text{ D2} - \frac{3}{4} \text{ a } \text{ c1 } \text{ C1 } \text{ d1 } \text{ e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ ii } \text{ a } \text{ C1 } \text{ c2 } \text{ d1 } \text{ e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ ii } \text{ a } \text{ c1 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} + \\ & \frac{3}{4} \text{ a } \text{ c2 } \text{ C2 } \text{ d1 } \text{ e}^{-\text{i} \text{ t}} + \frac{3}{8} \text{ a } \text{ d1}^2 \text{ D1 } \text{ e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ ii } \text{ a } \text{ c1 } \text{ C1 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ a } \text{ C1 } \text{ c2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} + \\ & \frac{3}{4} \text{ a } \text{ c1 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{4} \text{ ii } \text{ a } \text{ c2 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ D1 } \text{ d2}^2 \text{ e}^{-\text{i} \text{ t}} - \\ & \frac{3}{4} \text{ a } \text{ c1 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{4} \text{ ii } \text{ a } \text{ c2 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ D1 } \text{ d2}^2 \text{ e}^{-\text{i} \text{ t}} - \\ & \frac{3}{4} \text{ a } \text{ c1 } \text{ C2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ d1 } \text{ D1 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ D1 } \text{ d2}^2 \text{ e}^{-\text{i} \text{ t}} - \\ & \frac{3}{4} \text{ a } \text{ c1 } \text{ c2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ d1 } \text{ d1 } \text{ d2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ a } \text{ d1 } \text{ d2 } \text{ d2}^2 \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ d2 } \text{ d2 } \text{ d2 } \text{ d2 } \text{ e}^{-\text{i} \text{ t}} - \frac{3}{8} \text{ d2 } \text{ d2 }$$

 $\frac{3}{2}$ i a d1² D2 $e^{-i t} - \frac{3}{4}$ a d1 d2 D2 $e^{-i t} + \frac{3}{2}$ i a d2² D2 $e^{-i t} + \frac{3}{4}$ a c1 C1 d1 $e^{i t} + \frac{3}{4}$ $\frac{5}{4}$ i a C1 c2 d1 e^{i t} - $\frac{7}{4}$ i a c1 C2 d1 e^{i t} + $\frac{5}{4}$ a c2 C2 d1 e^{i t} - $\frac{3}{2}$ a d1² D1 e^{i t} + $\frac{5}{4}$ i a c1 C1 d2 e^{it} - $\frac{7}{4}$ a C1 c2 d2 e^{it} + $\frac{5}{4}$ a c1 C2 d2 e^{it} + $\frac{3}{4}$ i a c2 C2 d2 e^{it} - $\frac{5}{4}\,\dot{\text{a}}\,\,\text{a d1 D1 d2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,+\,\frac{7}{8}\,\text{a D1 d2}^2\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,+\,\frac{7}{8}\,\dot{\text{a}}\,\,\text{a d1}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,-\,\frac{5}{4}\,\,\text{a d1 d2 D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,-\,\frac{3}{8}\,\dot{\text{i}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,-\,\frac{3}{8}\,\dot{\text{i}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{t}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\dot{\text{b}}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{a d2}^2\,\,\text{D2}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{e}^{\dot{\text{i}}\,\,\text{b}}\,-\,\frac{3}{8}\,\,\text{e}^{\dot{\text{i}}\,$ $\frac{1}{4} \text{ a c1 C1 d1 } e^{2 \, \mathrm{i} \, \mathrm{t}} - \frac{1}{4} \, \mathrm{i} \text{ a C1 c2 d1 } e^{2 \, \mathrm{i} \, \mathrm{t}} - \frac{1}{4} \, \mathrm{i} \text{ a c1 C2 d1 } e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{a c2 C2 d1} \, e^{2 \, \mathrm{i} \, \mathrm{t}} + \frac{1}{4} \, \mathrm{i} \, \mathrm{a c2 C2 d1} \, \mathrm{c2 C2 d$ $\frac{1}{8} \text{ a d1}^2 \text{ D1 } \text{ e}^{2 \text{ i t}} - \frac{1}{4} \text{ i a c1 C1 d2 } \text{ e}^{2 \text{ i t}} + \frac{1}{4} \text{ a C1 c2 d2 } \text{ e}^{2 \text{ i t}} + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} + \frac{1}{4} \text{ e}^{2 \text{ i t}} + \frac{1}{4} \text{ a c1 C2 d2 } \text{ e}^{2 \text{ i t}} + \frac{1}{4} \text{ e}^{2 \text{ i t}} + \frac{1}{4}$ $\frac{1}{4} \; \text{i a c2 C2 d2} \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{4} \; \text{i a d1 D1 d2} \; \text{e}^{2 \; \text{i} \; \text{t}} \; - \; \frac{1}{8} \; \text{a D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{i a d1}^2 \; \text{D2} \; \text{e}^{2 \; \text{i} \; \text{t}} \; - \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{e}^{2 \; \text{i} \; \text{t}} \; + \; \frac{1}{8} \; \text{old D1 d2}^2 \; \text{old D1 d2}^2 \; + \; \frac{1}{8} \; \text{ol$ $\frac{1}{4}$ a d1 d2 D2 $e^{2 i t}$ - $\frac{1}{9}$ i a d2² D2 $e^{2 i t}$ - $\frac{1}{9}$ c1² D1 g - $\frac{1}{4}$ i c1 c2 D1 g - $\frac{3}{8}$ c2² D1 g + $\frac{3}{2}$ \pm c1 D2 g + $\frac{1}{4}$ c1 c2 D2 g + $\frac{1}{2}$ \pm c2 D2 g + $\frac{3}{2}$ c1 D1 $e^{-i + i}$ g - $\frac{3}{4}$ \pm c1 c2 D1 $e^{-i + i}$ g - $\frac{3}{8}$ c2² D1 e^{-it} g - $\frac{3}{8}$ i c1² D2 e^{-it} g - $\frac{3}{4}$ c1 c2 D2 e^{-it} g + $\frac{3}{8}$ i c2² D2 e^{-it} g - $\frac{3}{2} \text{ c1}^2 \text{ D1 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ i c1 c2 D1 } \text{ e}^{\text{i t}} \text{ g} + \frac{7}{2} \text{ c2}^2 \text{ D1 } \text{ e}^{\text{i t}} \text{ g} + \frac{7}{2} \text{ i c1}^2 \text{ D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ g} - \frac{5}{4} \text{ c1 c2 D2 } \text{ e}^{\text{i t}} \text{ e}^{\text{i t}}$ $\frac{3}{2} \pm c2^{2} D2 e^{it} g + \frac{1}{2} c1^{2} D1 e^{2it} g + \frac{1}{4} \pm c1 c2 D1 e^{2it} g - \frac{1}{2} c2^{2} D1 e^{2it} g + \frac{1}{4} + \frac{1}{2} c1 c2 D1 e^{2it} g + \frac{1}{2} c2^{2} D1 e^{2it} g + \frac{1}{2} c1 c2 D1 e^{2it} g$ $\frac{1}{2} \pm c1^{2} D2 e^{2 \pm t} g - \frac{1}{4} c1 c2 D2 e^{2 \pm t} g - \frac{1}{2} \pm c2^{2} D2 e^{2 \pm t} g + \frac{\pm p33}{2} + \frac{z33}{2} +$ s^{5} | i a C1 d1 p23 + a C2 d1 p23 - a C1 d2 p23 + i a C2 d2 p23 + i a C1 d1 $e^{-i t}$ p23 + a C2 d1 $e^{-i\ t}$ p23 + a C1 d2 $e^{-i\ t}$ p23 - i a C2 d2 $e^{-i\ t}$ p23 - i c1 D1 g p23 + c2 D1 g p23 c1 D2 g p23 - \pm c2 D2 g p23 - \pm c1 D1 $e^{-i \ t}$ g p23 - c2 D1 $e^{-i \ t}$ g p23 - c1 D2 $e^{-i \ t}$ g p23 + i c2 D2 e^{-it} g p23 + $\frac{1}{2}$ i a c1 d1 P23 + $\frac{1}{2}$ a c2 d1 P23 + $\frac{1}{2}$ a c1 d2 P23 - $\frac{1}{2}$ i a c2 d2 P23 i a c1 d1 e^{it} P23 - i a c2 d2 e^{it} P23 - $\frac{3}{2}$ i a c1 d1 e^{2it} P23 + $\frac{3}{2}$ a c2 d1 e^{2it} P23 + $\frac{3}{2}$ a c1 d2 e^{2it} P23 + $\frac{3}{2}$ i a c2 d2 e^{2it} P23 + i a c1 C1 p33 - a C1 c2 p33 + a c1 C2 p33 + i a c2 C2 p33 – i a d1 D1 p33 + a D1 d2 p33 – a d1 D2 p33 – i a d2 D2 p33 + i a c1 C1 $e^{-i t}$ p33 + a C1 c2 $e^{-i\ t}$ p33 + a c1 C2 $e^{-i\ t}$ p33 - i a c2 C2 $e^{-i\ t}$ p33 - i a d1 D1 $e^{-i\ t}$ p33 a D1 d2 e^{-it} p33 - a d1 D2 e^{-it} p33 + i a d2 D2 e^{-it} p33 - $\frac{1}{2}$ i a d1 d2 P33 - $\frac{1}{2}$ a d1 d2 P33 + $\frac{1}{4}$ i a d2² P33 + $\frac{1}{2}$ i a d1² e^{i t} P33 + $\frac{1}{2}$ i a d2² e^{i t} P33 + $\frac{3}{4}$ i a d1² e^{2 i t} P33 - $\frac{3}{2}$ a d1 d2 $e^{2 i t}$ P33 - $\frac{3}{4}$ i a d2² $e^{2 i t}$ P33 - $\frac{1}{4}$ i c1² g P33 - $\frac{1}{2}$ c1 c2 g P33 + $\frac{1}{4}$ i c2² g P33 + $\frac{1}{2} \pm c1^{2} e^{i t} g P33 + \frac{1}{2} \pm c2^{2} e^{i t} g P33 + \frac{3}{4} \pm c1^{2} e^{2 i t} g P33 - \frac{3}{2} c1 c2 e^{2 i t}$

 $\frac{3}{}$ \pm c2 2 e^{2} \pm t g P33 + a C1 d1 z23 – 2 \pm a C2 d1 z23 + 2 \pm a C1 d2 z23 + a C2 d2 z23 – $\frac{1}{2}$ a C1 d1 $e^{-i t}$ z23 + $\frac{1}{2}$ i a C2 d1 $e^{-i t}$ z23 + $\frac{1}{2}$ i a C1 d2 $e^{-i t}$ z23 + $\frac{1}{2}$ a C2 d2 $e^{-i t}$ z23 - $\frac{1}{2}$ a C1 d1 e^{it} z23 - $\frac{1}{2}$ i a C2 d1 e^{it} z23 - $\frac{1}{2}$ i a C1 d2 e^{it} z23 + $\frac{1}{2}$ a C2 d2 e^{it} z23 c1 D1 g z23 - 2 \pm c2 D1 g z23 + 2 \pm c1 D2 g z23 - c2 D2 g z23 + \pm c1 D1 \pm c z23 - $\frac{1}{2} \pm c2 \, D1 \, e^{-i \, t} \, g \, z23 - \frac{1}{2} \pm c1 \, D2 \, e^{-i \, t} \, g \, z23 - \frac{1}{2} \, c2 \, D2 \, e^{-i \, t} \, g \, z23 + \frac{1}{2} \, c1 \, D1 \, e^{i \, t} \, g \, z23 + \frac{2} \, c1 \, D1 \, e^{i \, t} \, g \, z23 + \frac{2}{2} \, c1 \, D1 \, e^{i \, t$ $\frac{1}{2}$ <u>i</u> c2 D1 e^{it} g z23 + $\frac{1}{2}$ <u>i</u> c1 D2 e^{it} g z23 - $\frac{1}{2}$ c2 D2 e^{it} g z23 - a c1 d1 Z23 + <u>i</u> a c2 d1 Z23 + i a c1 d2 Z23 + a c2 d2 Z23 + a c1 d1 e^{2it} Z23 + i a c2 d1 e^{2it} Z23 + i a c1 d2 e^{2it} Z23 a c2 d2 $e^{2\,i\,t}$ Z23 + a c1 C1 z33 + 2 i a C1 c2 z33 - 2 i a c1 C2 z33 + a c2 C2 z33 a d1 D1 z33 - 2 i a D1 d2 z33 + 2 i a d1 D2 z33 - a d2 D2 z33 - $\frac{1}{}$ a c1 C1 $e^{-i t}$ z33 + $\frac{1}{2}$ i a C1 c2 e^{-it} z33 + $\frac{1}{2}$ i a c1 C2 e^{-it} z33 + $\frac{1}{2}$ a c2 C2 e^{-it} z33 + $\frac{1}{2}$ a d1 D1 e^{-it} z33 - $\frac{1}{2}$ i a D1 d2 e^{-it} z33 - $\frac{1}{2}$ i a d1 D2 e^{-it} z33 - $\frac{1}{2}$ a d2 D2 e^{-it} z33 - $\frac{1}{2}$ a c1 C1 e^{it} z33 - $\frac{1}{2} \pm a \, \text{C1 c2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, - \, \frac{1}{2} \pm a \, \text{c1 C2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a c2 C2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a d1 D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a d2 D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a d2 D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a d2 D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{a d2 D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, \text{z33} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{1}{2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{1}{2} \, \text{e}^{\text{$ $\frac{1}{2}$ <u>i</u> a D1 d2 e^{i t} z33 + $\frac{1}{2}$ <u>i</u> a d1 D2 e^{i t} z33 - $\frac{1}{2}$ a d2 D2 e^{i t} z33 + $\frac{1}{2}$ a d1² Z33 - <u>i</u> a d1 d2 Z33 - $\frac{1}{2}$ a d2² Z33 - $\frac{1}{2}$ a d1² e^{2 i t} Z33 - i a d1 d2 e^{2 i t} Z33 + $\frac{1}{2}$ a d2² e^{2 i t} Z33 + $\frac{1}{2}$ c1² g Z33 $i c1 c2 g Z33 - \frac{1}{2} c2^{2} g Z33 - \frac{1}{2} c1^{2} e^{2it} g Z33 - i c1 c2 e^{2it} g Z33 + \frac{1}{2} c2^{2} e^{2it} g Z3$ s^7 | a d1 p23 P23 - i a d2 p23 P23 + a d1 e^{it} p23 P23 + i a d2 e^{it} p23 P23 + a c1 P23 p33 i a c2 P23 p33 + a c1 $e^{i t}$ P23 p33 + i a c2 $e^{i t}$ P23 p33 - c1 g p23 P33 + i c2 g p23 P33 c1 $e^{i\,t}$ g p23 P33 - i c2 $e^{i\,t}$ g p23 P33 - a d1 p33 P33 + i a d2 p33 P33 - a d1 $e^{i\,t}$ p33 P33 $ilde{\mathtt{i}}$ a d2 e^{i} t p33 P33 – 2 i D1 $\mathrm{e}^{-\mathrm{i}}$ t g p23 z23 – 2 D2 $\mathrm{e}^{-\mathrm{i}}$ t g p23 z23 – 2 i a d1 e^{i} t P23 z23 + 2 a d2 $e^{i t}$ P23 z23 + 2 i a C1 $e^{-i t}$ p33 z23 + 2 a C2 $e^{-i t}$ p33 z23 + 2 i c1 $e^{i t}$ g P33 z23 -2 c2 e^{it} g P33 z23 + $\frac{1}{2}$ D1 g z23² + $\frac{1}{2}$ i D2 g z23² - $\frac{1}{2}$ D1 e^{-it} g z23² + $\frac{1}{2}$ i D2 e^{-it} g z23² + i a d1 p23 Z23 + a d2 p23 Z23 + i a d1 e^{i} t p23 Z23 - a d2 e^{i} t p23 Z23 + i a c1 p33 Z23 + a c2 p33 Z23 + \pm a c1 e^{\pm} t p33 Z23 - a c2 e^{\pm} t p33 Z23 - a d1 z23 Z23 + \pm a d2 z23 Z23 + a d1 $e^{i\,t}$ z23 Z23 + i a d2 $e^{i\,t}$ z23 Z23 + 2 i a C1 $e^{-i\,t}$ p23 z33 + 2 a C2 $e^{-i\,t}$ p23 z33 -2 i a c1 e^{i} t P23 z33 + 2 a c2 e^{i} t P23 z33 - 2 i a D1 $\text{e}^{-\text{i}}$ t p33 z33 - 2 a D2 $\text{e}^{-\text{i}}$ t p33 z33 + 2 i a d1 e^{i} t P33 z33 - 2 a d2 e^{i} t P33 z33 - a C1 z23 z33 - i a C2 z23 z33 + a C1 $e^{\text{-i}}$ t z23 z33 i a C2 e^{-i} t z23 z33 – a c1 Z23 z33 + i a c2 Z23 z33 + a c1 e^{i} Z23 z33 + i a c2 e^{i} t Z23 z33 + $\frac{1}{2}$ a D1 z33 2 + $\frac{1}{2}$ i a D2 z33 2 - $\frac{1}{2}$ a D1 $e^{-i t}$ z33 2 + $\frac{1}{2}$ i a D2 $e^{-i t}$ z33 2 - i c1 g p23 Z33 c2 g p23 Z33 - i c1 e^{it} g p23 Z33 + c2 e^{it} g p23 Z33 - i a d1 p33 Z33 - a d2 p33 Z33 i a d1 e^{i} t p33 Z33 + a d2 e^{i} t p33 Z33 + c1 g z23 Z33 - i c2 g z23 Z33 - c1 e^{i} t g z23 Z33 i c2 e^{it} g z23 Z33 + a d1 z33 Z33 - i a d2 z33 Z33 - a d1 e^{it} z33 Z33 - i a d2 e^{it} z33 Z33 | +

 s^9 (2 a P23 p33 z23 - 2 g p23 P33 z23 + i g P33 z23² + 2 i a p33 z23 Z23 + 2 a p23 P23 z33 - 2 a p33 P33 z33 - 2 i a P23 z23 z33 + 2 i a p23 Z23 z33 + i a P33 z33² - 2 i g p23 z23 Z33 - 2 i a p33 z33 Z33) $ln[*]:= dp3trunc := \left(\frac{1}{2}d1e^{it} + \frac{1}{2}id2e^{it}\right)s +$ $s^3 \left(\frac{1}{4} \text{ a c1 C1 d1} + \frac{1}{4} \text{ ii a C1 c2 d1} - \frac{3}{4} \text{ ii a c1 C2 d1} - \frac{1}{4} \text{ a c2 C2 d1} - \frac{1}{6} \text{ a d1}^2 \text{ D1} + \frac{1}{4} \text{ ii a c1 C1 d2} + \frac{1}{6} \text{ c1 C1 d2} + \frac{1}{6} \text{ c2 C2 d1} - \frac{1}{6} \text{ c2 C2 d1} - \frac{1}{6} \text{ c2 C2 d1} + \frac{1}{6} \text{ c3 C1 C1 d2} + \frac{1}{6} \text{ c3 C1$ $\frac{3}{4}$ a C1 c2 d2 - $\frac{1}{4}$ a c1 C2 d2 - $\frac{1}{4}$ ii a c2 C2 d2 - $\frac{1}{4}$ ii a d1 D1 d2 - $\frac{3}{6}$ a D1 d2² + $\frac{3}{9}$ i a d1² D2 + $\frac{1}{4}$ a d1 d2 D2 + $\frac{1}{9}$ i a d2² D2 - $\frac{3}{4}$ a c1 C1 d1 e^{-it} + $\frac{3}{4}$ i a C1 c2 d1 e^{-it} + $\frac{3}{1}$ i a c1 C2 d1 $e^{-it} + \frac{3}{1}$ a c2 C2 d1 $e^{-it} + \frac{3}{1}$ a d1² D1 $e^{-it} + \frac{3}{1}$ i a c1 C1 d2 $e^{-it} + \frac{3}{1}$ $\frac{3}{1}$ a C1 c2 d2 $e^{-i.t}$ + $\frac{3}{1}$ a c1 C2 d2 $e^{-i.t}$ - $\frac{3}{1}$ ii a c2 C2 d2 $e^{-i.t}$ - $\frac{3}{1}$ ii a d1 D1 d2 $e^{-i.t}$ - $\frac{3}{2}$ a D1 d2² e^{-it} - $\frac{3}{2}$ i a d1² D2 e^{-it} - $\frac{3}{2}$ a d1 d2 D2 e^{-it} + $\frac{3}{2}$ i a d2² D2 e^{-it} + $\frac{3}{4}$ a c1 C1 d1 e^{it} + $\frac{5}{4}$ i a C1 c2 d1 e^{it} - $\frac{7}{4}$ i a c1 C2 d1 e^{it} + $\frac{5}{4}$ a c2 C2 d1 e^{it} - $\frac{3}{2}$ a d1² D1 e^{i t} + $\frac{5}{4}$ i a c1 C1 d2 e^{i t} - $\frac{7}{4}$ a C1 c2 d2 e^{i t} + $\frac{5}{4}$ a c1 C2 d2 e^{i t} + $\frac{3}{4}$ i a c2 C2 d2 e^{it} - $\frac{5}{4}$ i a d1 D1 d2 e^{it} + $\frac{7}{2}$ a D1 d2² e^{it} + $\frac{7}{2}$ i a d1² D2 e^{it} - $\frac{5}{4}$ a d1 d2 D2 e^{it} - $\frac{3}{8}$ i a d2² D2 e^{it} - $\frac{1}{4}$ a c1 C1 d1 e^{2it} - $\frac{1}{4}$ i a C1 c2 d1 e^{2it} - $\frac{1}{1} \pm a c1 C2 d1 e^{2 \pm t} + \frac{1}{1} a c2 C2 d1 e^{2 \pm t} + \frac{1}{1} a d1^{2} D1 e^{2 \pm t} - \frac{1}{1} \pm a c1 C1 d2 e^{2 \pm t} + \frac{1}{1} a d1^{2} D1 e^{2 \pm t} + \frac{1}{1} a d1^{2} D1^{2} e^{2} D1^{2} e^{2} D1^{2} e^{2} D1^$ $\frac{1}{4}$ a C1 c2 d2 $e^{2it} + \frac{1}{4}$ a c1 C2 d2 $e^{2it} + \frac{1}{4}$ i a c2 C2 d2 $e^{2it} + \frac{1}{4}$ i a d1 D1 d2 $e^{2it} - \frac{1}{4}$ $\frac{1}{9}$ a D1 d2² e^{2 i t} + $\frac{1}{9}$ i a d1² D2 e^{2 i t} - $\frac{1}{4}$ a d1 d2 D2 e^{2 i t} - $\frac{1}{9}$ i a d2² D2 e^{2 i t} - $\frac{1}{9}$ c1² D1 g - $\frac{1}{4} \pm c1 \ c2 \ D1 \ g - \frac{3}{8} \ c2^2 \ D1 \ g + \frac{3}{8} \pm c1^2 \ D2 \ g + \frac{1}{4} \ c1 \ c2 \ D2 \ g + \frac{1}{8} \pm c2^2 \ D2 \ g + \frac{3}{8} \ c1^2 \ D1 \ e^{-i \pm t} \ g - \frac{1}{8} + \frac{1}{8} +$ $\frac{3}{1} \pm c1 \ c2 \ D1 \ e^{-i \pm t} \ g - \frac{3}{2} \ c2^2 \ D1 \ e^{-i \pm t} \ g - \frac{3}{2} \pm c1^2 \ D2 \ e^{-i \pm t} \ g - \frac{3}{4} \ c1 \ c2 \ D2 \ e^{-i \pm t} \ g +$ $\frac{3}{9} \pm c2^{2} D2 e^{-it} g - \frac{3}{9} c1^{2} D1 e^{it} g - \frac{5}{4} \pm c1 c2 D1 e^{it} g + \frac{7}{9} c2^{2} D1 e^{it} g + \frac{7}{9} \pm c1^{2} D2 e^{it} g - \frac{1}{9} + \frac{1$ $\frac{5}{4} \text{ c1 c2 D2 } e^{it} g - \frac{3}{4} i \text{ c2}^2 \text{ D2 } e^{it} g + \frac{1}{4} \text{ c1}^2 \text{ D1 } e^{2it} g + \frac{1}{4} i \text{ c1 c2 D1 } e^{2it} g - \frac{1}{4} e^{2it} g -$ $\frac{1}{2} c2^{2} D1 e^{2 i t} g + \frac{1}{2} i c1^{2} D2 e^{2 i t} g - \frac{1}{4} c1 c2 D2 e^{2 i t} g - \frac{1}{8} i c2^{2} D2 e^{2 i t} g + \frac{i p33}{2} + \frac{z33}{2}$ $ln[*]:= DSolve \Big[\Big\{ l'[t] = \frac{1}{4} \, \text{in a c1 C1 d1} - \frac{1}{4} \, \text{a C1 c2 d1} + \frac{3}{4} \, \text{a c1 C2 d1} - \frac{1}{4} \, \text{in a c2 C2 d1} - \frac{1}{2} \, \text{in a d1}^2 \, \text{D1} - \frac{1}{4} \, \text{on c2 c2 d1} \Big] \Big] = \frac{1}{4} \, \text{in a c2 c2 d1} - \frac{1}{4} \, \text{in a c2 c2 d2} \Big] = \frac{1}{4} \, \text{in a c2 c2 d2} + \frac{1}{4} \, \text{in a c2 c2 d2} \Big] = \frac{1}{4} \, \text{in a c2 c2 d2} + \frac{1}{4} \, \text{in a c2 c2 d2} \Big] = \frac{1}{4} \, \text{in a c2 c2 d2} + \frac{1}{4} \, \text{in a c2 c2 d2} \Big]$ $\frac{1}{4}$ a c1 C1 d2 + $\frac{3}{4}$ i a C1 c2 d2 - $\frac{1}{4}$ i a c1 C2 d2 + $\frac{1}{4}$ a c2 C2 d2 + $\frac{1}{4}$ a d1 D1 d2 - $\frac{3}{8}$ i a D1 d2² -

 $\frac{3}{2}$ a d1² D2 + $\frac{1}{4}$ i a d1 d2 D2 - $\frac{1}{2}$ a d2² D2 - $\frac{1}{4}$ i a c1 C1 d1 e^{-it} - $\frac{1}{4}$ a C1 c2 d1 e^{-it} - $\frac{1}{4} \pm a C1 c2 d2 e^{-i t} + \frac{1}{4} \pm a c1 C2 d2 e^{-i t} + \frac{1}{4} a c2 C2 d2 e^{-i t} + \frac{1}{4} a d1 D1 d2 e^{-i t} \frac{1}{2} \pm a \, D1 \, d2^2 \, e^{-i \, t} + \frac{1}{2} \, a \, d1^2 \, D2 \, e^{-i \, t} - \frac{1}{2} \pm a \, d1 \, d2 \, D2 \, e^{-i \, t} - \frac{1}{2} \, a \, d2^2 \, D2 \, e^{-i \, t} + \frac{1}{2} \, a \,$ $\frac{5}{4}$ i a c1 C1 d1 e^{it} - $\frac{3}{4}$ a C1 c2 d1 e^{it} + $\frac{1}{4}$ a c1 C2 d1 e^{it} + $\frac{3}{4}$ i a c2 C2 d1 e^{it} - $\frac{5}{2}$ <u>i</u> a d1² D1 e^{it} - $\frac{3}{4}$ a c1 C1 d2 e^{it} - $\frac{1}{4}$ <u>i</u> a C1 c2 d2 e^{it} + $\frac{3}{4}$ <u>i</u> a c1 C2 d2 e^{it} - $\frac{5}{4}$ a c2 C2 d2 $e^{it} + \frac{3}{4}$ a d1 D1 d2 $e^{it} + \frac{1}{2}$ i a D1 d2² $e^{it} - \frac{1}{2}$ a d1² D2 $e^{it} - \frac{3}{4}$ i a d1 d2 D2 $e^{it} + \frac{3}{4}$ $\frac{5}{2}$ a d2² D2 e^{it} + $\frac{3}{4}$ i a c1 C1 d1 e^{2 it} - $\frac{3}{4}$ a C1 c2 d1 e^{2 it} - $\frac{3}{4}$ a c1 C2 d1 e^{2 it} - $\frac{3}{4}$ i a c2 C2 d1 e^{2it} - $\frac{3}{6}$ i a d1² D1 e^{2it} - $\frac{3}{4}$ a c1 C1 d2 e^{2it} - $\frac{3}{4}$ i a C1 c2 d2 e^{2it} - $\frac{3}{4} \pm a \, c1 \, C2 \, d2 \, e^{2 \pm t} + \frac{3}{4} \, a \, c2 \, C2 \, d2 \, e^{2 \pm t} + \frac{3}{4} \, a \, d1 \, D1 \, d2 \, e^{2 \pm t} + \frac{3}{4} \, \pm a \, D1 \, d2^2 \, e^{2 \pm t} + \frac{3}{4} \, d1 \, D1 \, d2^2 \,$ $\frac{3}{2}$ a d1² D2 e^{2 i t} + $\frac{3}{2}$ i a d1 d2 D2 e^{2 i t} - $\frac{3}{2}$ a d2² D2 e^{2 i t} - $\frac{1}{2}$ i c1² D1 g + $\frac{1}{2}$ c1 c2 D1 g - $\frac{3}{9} \pm c2^{2} D1 g - \frac{3}{9} c1^{2} D2 g + \frac{1}{4} \pm c1 c2 D2 g - \frac{1}{9} c2^{2} D2 g + \frac{1}{9} \pm c1^{2} D1 e^{-i \pm} g + \frac{1}{4} c1 c2 D1 e^{-i \pm} g - \frac{1}{9} c1 c2 D1 e^{-i \pm} g -$ $\frac{1}{2} \pm c2^2 D1 e^{-it} g + \frac{1}{2} c1^2 D2 e^{-it} g - \frac{1}{4} \pm c1 c2 D2 e^{-it} g - \frac{1}{2} c2^2 D2 e^{-it}$ $\frac{5}{8} \pm c1^{2} D1 e^{it} g + \frac{3}{4} c1 c2 D1 e^{it} g + \frac{1}{9} \pm c2^{2} D1 e^{it} g - \frac{1}{9} c1^{2} D2 e^{it} g - \frac{3}{4} \pm c1 c2 D2 e^{it} g +$ $\frac{5}{2} c2^{2} D2 e^{it} g - \frac{3}{2} i c1^{2} D1 e^{2it} g + \frac{3}{4} c1 c2 D1 e^{2it} g + \frac{3}{2} i c2^{2} D1 e^{2it} g +$ $\frac{3}{9} c1^{2} D2 e^{2it} g + \frac{3}{4} i c1 c2 D2 e^{2it} g - \frac{3}{9} c2^{2} D2 e^{2it} g - \frac{m[t]}{2} + \frac{i * l[t]}{2},$ $m'[t] = \frac{1}{4} a c1 C1 d1 + \frac{1}{4} i a C1 c2 d1 - \frac{3}{4} i a c1 C2 d1 - \frac{1}{4} a c2 C2 d1 - \frac{1}{9} a d1^2 D1 +$ $\frac{1}{4}$ i a c1 C1 d2 + $\frac{3}{4}$ a C1 c2 d2 - $\frac{1}{4}$ a c1 C2 d2 - $\frac{1}{4}$ i a c2 C2 d2 - $\frac{1}{4}$ i a d1 D1 d2 - $\frac{3}{4}$ a D1 d2² + $\frac{3}{8}$ i a d1² D2 + $\frac{1}{4}$ a d1 d2 D2 + $\frac{1}{8}$ i a d2² D2 - $\frac{3}{4}$ a c1 C1 d1 e^{-i t} + $\frac{3}{4}$ i a C1 c2 d1 e^{-i t} + $\frac{3}{1}$ \pm a c1 C2 d1 $e^{-i \cdot t}$ + $\frac{3}{1}$ a c2 C2 d1 $e^{-i \cdot t}$ + $\frac{3}{1}$ a d1² D1 $e^{-i \cdot t}$ + $\frac{3}{1}$ \pm a c1 C1 d2 $e^{-i \cdot t}$ + $\frac{3}{4}$ a C1 c2 d2 $e^{-it} + \frac{3}{4}$ a c1 C2 d2 $e^{-it} - \frac{3}{4}$ i a c2 C2 d2 $e^{-it} - \frac{3}{4}$ i a d1 D1 d2 $e^{-it} - \frac{3}{4}$ $\frac{3}{9} \text{ a D1 d2}^2 \text{ e}^{-\text{i} \text{ t}} - \frac{3}{9} \text{ i a d1}^2 \text{ D2 e}^{-\text{i} \text{ t}} - \frac{3}{4} \text{ a d1 d2 D2 e}^{-\text{i} \text{ t}} + \frac{3}{9} \text{ i a d2}^2 \text{ D2 e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ a c1 C1 d1 e}^{\text{i} \text{ t}} + \frac{3}{4} \text{ a c2 C1 d1 e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ a c2 C1 d2 e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ a c2 C1 d2 e}^{-\text{i} \text{ t}} + \frac{3}{4} \text{ a c2 C2 d2 e$ $\frac{5}{4}$ i a C1 c2 d1 e^{it} - $\frac{7}{4}$ i a c1 C2 d1 e^{it} + $\frac{5}{4}$ a c2 C2 d1 e^{it} - $\frac{3}{2}$ a d1² D1 e^{it} +

 $\frac{5}{4}$ i a c1 C1 d2 e^{it} - $\frac{7}{4}$ a C1 c2 d2 e^{it} + $\frac{5}{4}$ a c1 C2 d2 e^{it} + $\frac{3}{4}$ i a c2 C2 d2 e^{it} - $\frac{5}{4}$ i a d1 D1 d2 e^{it} + $\frac{7}{9}$ a D1 d2² e^{it} + $\frac{7}{9}$ i a d1² D2 e^{it} - $\frac{5}{4}$ a d1 d2 D2 e^{it} - $\frac{3}{9}$ i a d2² D2 e^{it} -4 8 8 4 8 $\frac{1}{4}$ a c1 C1 d1 $e^{2it} - \frac{1}{4}i$ a C1 c2 d1 $e^{2it} - \frac{1}{4}i$ a c1 C2 d1 $e^{2it} + \frac{1}{4}$ a c2 C2 d1 $e^{2it} + \frac{1}{4}i$ $\frac{1}{2}$ a d1² D1 e^{2 i t} - $\frac{1}{4}$ i a c1 C1 d2 e^{2 i t} + $\frac{1}{4}$ a C1 c2 d2 e^{2 i t} + $\frac{1}{4}$ a c1 C2 d2 e^{2 i t} + $\frac{1}{4} \pm a \, c2 \, C2 \, d2 \, e^{2 \pm t} + \frac{1}{4} \pm a \, d1 \, D1 \, d2 \, e^{2 \pm t} - \frac{1}{8} \, a \, D1 \, d2^2 \, e^{2 \pm t} + \frac{1}{8} \pm a \, d1^2 \, D2 \, e^{2 \pm t} \frac{1}{4}$ a d1 d2 D2 $e^{2it} - \frac{1}{2}$ i a d2² D2 $e^{2it} - \frac{1}{2}$ c1² D1 g $- \frac{1}{4}$ i c1 c2 D1 g $- \frac{3}{2}$ c2² D1 g + $\frac{3}{9}$ \pm c1² D2 g + $\frac{1}{4}$ c1 c2 D2 g + $\frac{1}{9}$ \pm c2² D2 g + $\frac{3}{9}$ c1² D1 $e^{-i \pm}$ g - $\frac{3}{4}$ \pm c1 c2 D1 $e^{-i \pm}$ g - $\frac{3}{8} c2^{2} D1 e^{-i t} g - \frac{3}{8} i c1^{2} D2 e^{-i t} g - \frac{3}{4} c1 c2 D2 e^{-i t} g + \frac{3}{9} i c2^{2} D2 e^{-i t} g - \frac{3}{9} c1^{2} D1 e^{i t} g - \frac{3}{9} c1^{2} D1 e^{-i t}$ $\frac{5}{4} \pm c1 c2 D1 e^{it} g + \frac{7}{8} c2^{2} D1 e^{it} g + \frac{7}{8} \pm c1^{2} D2 e^{it} g - \frac{5}{4} c1 c2 D2 e^{it} g - \frac{3}{8} \pm c2^{2} D2 e^{it} g +$ $\frac{1}{9} c1^{2} D1 e^{2 i t} g + \frac{1}{4} i c1 c2 D1 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g + \frac{1}{9} i c1^{2} D2 e^{2 i t} g - \frac{1}{9} c2^{2} D1 e^{2 i t} g - \frac{1}{9} c2^{2}$ $\frac{1}{4} c1 c2 D2 e^{2it} g - \frac{1}{9} i c2^2 D2 e^{2it} g + \frac{i * m[t]}{2} + \frac{l[t]}{2} , \{l[t], m[t]\}, t$ $Out[\circ] = \left\{ \left\{ l[t] \rightarrow \right\} \right\}$ $2 \pm d1^2 D2 - 2 d1 d2 D2) + (c1 - \pm c2) (\pm c2 D1 + c1 (D1 - 2 \pm D2)) g) +$ $2 e^{i t} (-a (2 c2 C2 d1 + d1^2 D1 - 2 C1 c2 d2 + D1 d2^2 - 2 c1 (C1 d1 + 2 i C2 d1 - C2 d2) +$ $2 \text{ id} 1^2 D2 - 2 d1 d2 D2) - (c1 + \text{ ic} c2) (-\text{ ic} c2 D1 + c1 (D1 + 2 \text{ i} D2)) g) +$ i d1 D2 + d2 D2) - $(c1 - i c2)^2 (D1 - i D2) g$) + $e^{2 i t}$ $\left(\text{a } \left(\text{d1} + \text{i} \text{ d2} \right) \right. \left(\text{2 i} \text{ C1 c2} + \text{2 c1 } \left(\text{C1} + \text{i} \text{ C2} \right) - \text{2 c2 C2} - \text{d1 D1} - \text{i} \text{ D1 d2} - \text{i} \text{ d1 D2} + \text{d2 D2} \right) - \left(\text{d2 C1} + \text{d2 C1} \right) - \text{d2 C2 C2} - \left(\text{d1 D1} - \text{d2 D1} \right) - \text{d2 C2 C2} - \left(\text{d1 D1} - \text{d2 D1} \right) - \text{d2 C2 C2} - \text{d2 D1} - \text{d2 D2} - \text{d2 D2} \right) - \left(\text{d2 C1} + \text{d2 D2} \right) - \text{d2 C2 C2} - \text{d2 D2} (c1 + i c2)^2 (D1 + i D2) g) +$ $\pm \ \mathsf{d1} \ \mathsf{D2} + \ \mathsf{d2} \ \mathsf{D2} \big) \ - \ \pm \ \left(\mathsf{c1} + \pm \ \mathsf{c2} \right)^2 \ \left(\mathsf{D1} - \pm \ \mathsf{D2} \right) \ \mathsf{g} \right) \ \mathsf{t} \bigg) \ \mathsf{Cos} \left[\frac{\mathsf{t}}{2} \right] \ + \ \mathsf{e}^{\frac{\mathsf{i} \, \mathsf{t}}{2}} \ \mathsf{C} \left[\mathsf{1} \right] \ \mathsf{Cos} \left[\frac{\mathsf{t}}{2} \right] \ - \ \mathsf{e}^{\frac{\mathsf{i} \, \mathsf{t}}{2}} \ \mathsf{C} \left[\mathsf{1} \right] \ \mathsf{Cos} \left[\frac{\mathsf{t}}{2} \right] \ - \ \mathsf{e}^{\frac{\mathsf{i} \, \mathsf{t}}{2}} \ \mathsf{Cos} \left[\frac{\mathsf{t}}{2} \right] \ + \ \mathsf{e}^{\frac{\mathsf{i} \, \mathsf{t}}{2}} \ \mathsf{Cos} \left[\frac{\mathsf{t}}{2} \right] \ \mathsf{Cos} \left[\frac{\mathsf{t}}{$ $\frac{1}{2} \,\, e^{\, \frac{\mathrm{i} \,\, t}{2}} \, \left(- \, e^{-2 \,\, \mathrm{i} \,\, t} \,\, \left(a \,\, \left(d1 - \, \mathrm{i} \,\, d2 \right) \,\, \left(2 \,\, C1 \,\, c2 - 2 \,\, \mathrm{i} \,\, c2 \,\, C2 + 2 \,\, c1 \,\, \left(\,\mathrm{i} \,\, C1 + C2 \right) \,\, - \,\, \mathrm{i} \,\, d1 \,\, D1 - 2 \,\, d1 \,\,$ D1 d2 - d1 D2 + i d2 D2) - i (c1 - i c2)² (D1 - i D2) g) $e^{2 i t} (a (d1 + i d2) (2 C1 c2 + 2 c1 (-i C1 + C2) + i (2 c2 C2 + d1 D1 + i D1 d2 + i))$ i d1 D2 - d2 D2) + $i (c1 + i c2)^{2} (D1 + i D2) g$ + $2 e^{i t}$ $(a (-2 c1 C2 d1 - 2 c2 C2 d2 - 2 d1 D1 d2 - 2 i D1 d2^2 + 2 C1 (c2 d1 + c1 d2 + 2 i c2 d2) +$ $d1^{2} \ D2 + d2^{2} \ D2 \big) \ + \ \Big(c1 + \text{$\dot{1}$} \ c2 \Big) \ \Big(-2 \ c2 \ D1 + c1 \ D2 - \text{$\dot{1}$} \ c2 \ D2 \Big) \ g \Big) \ - 2 \ e^{-\text{$\dot{1}$} \ t}$ $\left(\text{a } \left(\text{-2 c1 C2 d1} - \text{2 c2 C2 d2} - \text{2 d1 D1 d2} + \text{2 i D1 d2}^2 + \text{2 C1 } \left(\text{c2 d1} + \text{c1 d2} - \text{2 i c2 d2}\right) \right. + \\ \left(\text{c2 d1} + \text{c1 d2} - \text{2 i c2 d2}\right) + \\ \left(\text{c2 d1} + \text{c1 d2} - \text{c2 i c2 d2}\right) + \\ \left(\text{c2 d1} + \text{c1 d2} - \text{c2 i c2 d2}\right) + \\ \left(\text{c2 d1} + \text{c1 d2}\right) + \\ \left(\text{c2 d1} + \text{c1$ $d1^2 D2 + d2^2 D2$) + (c1 - i c2) (-2 c2 D1 + c1 D2 + i c2 D2) g) -

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In[•]:= z33temp :=
                         \frac{1}{2} e^{\frac{i t}{2}} \left( 2 e^{-i t} \left( a \left( -2 c1 C1 d1 + 2 c2 C2 d1 + d1^{2} D1 - 2 C1 c2 d2 + D1 d2^{2} + 2 c1 C2 \left( 2 i d1 + d2 \right) - 2 c1 c2 d2 + D1 d2^{2} \right) \right) \right)
                                                                                 2 \pm d1^2 D2 - 2 d1 d2 D2) + (c1 - \pm c2) (\pm c2 D1 + c1 (D1 - 2 \pm D2)) g) +
                                                2 e^{i t} (-a (2 c2 C2 d1 + d1<sup>2</sup> D1 - 2 C1 c2 d2 + D1 d2<sup>2</sup> - 2 c1 (C1 d1 + 2 i C2 d1 - C2 d2) +
                                                                                  2 i d1^2 D2 - 2 d1 d2 D2) - (c1 + i c2) (-i c2 D1 + c1 (D1 + 2 i D2)) g) + e^{-2 i t}
                                                      (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) -
                                                                (c1 - i c2)^2 (D1 - i D2) g) +
                                               e^{2\,\dot{\mathtt{n}}\,\,\mathsf{t}}\,\left(a\,\left(\mathsf{d1}+\dot{\mathtt{n}}\,\,\mathsf{d2}\right)\,\left(2\,\dot{\mathtt{n}}\,\,\mathsf{C1}\,\,\mathsf{c2}+2\,\,\mathsf{c1}\,\left(\mathsf{C1}+\dot{\mathtt{n}}\,\,\mathsf{C2}\right)\,-\,2\,\,\mathsf{c2}\,\,\mathsf{C2}\,\,\mathsf{-}\,\,\mathsf{d1}\,\,\mathsf{D1}\,-\,\dot{\mathtt{n}}\,\,\mathsf{D1}\,\,\mathsf{d2}\,-\,\dot{\mathtt{n}}\,\,\mathsf{d1}\,\,\mathsf{D2}\,+\,\mathsf{d2}\,\,\mathsf{D2}\right)\,-\,2\,\,\mathsf{c2}\,\,\mathsf{C2}\,\,\mathsf{C3}\,-\,\mathsf{d1}\,\,\mathsf{D1}\,-\,\dot{\mathtt{n}}\,\,\mathsf{D1}\,\,\mathsf{d2}\,-\,\dot{\mathtt{n}}\,\,\mathsf{d1}\,\,\mathsf{D2}\,+\,\mathsf{d2}\,\,\mathsf{D2}\right)\,-\,\mathsf{d2}\,\,\mathsf{d2}\,\,\mathsf{D2}\,\,\mathsf{D3}\,-\,\mathsf{d3}\,\,\mathsf{D3}\,\,\mathsf{D3}\,\,\mathsf{D3}\,\,\mathsf{D4}\,\,\mathsf{D3}\,\,\mathsf{D3}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{D4}\,\,\mathsf{
                                                                (c1 + i c2)^2 (D1 + i D2) g) +
                                               4 (a (-i d1 + d2) (-2 c1 C1 - 2 i C1 c2 + 2 i c1 C2 - 2 c2 C2 + d1 D1 + i D1 d2 -
                                                                                \dot{n} d1 D2 + d2 D2) - \dot{n} (c1 + \dot{n} c2)^2 (D1 - \dot{n} D2) g) t) Cos[<math>\frac{\tau}{2}] +
                             e^{\frac{i\tau}{2}}C[1] Cos[\frac{t}{2}] - \frac{1}{8}e^{\frac{i\tau}{2}}(-e^{-2i\pi t}(a(d1-i\pi d2)(2C1c2-2i\pi c2C2+2c1(i\pi C1+C2)-i\pi d2)))
                                                                                 id1D1 - D1d2 - d1D2 + id2D2) -i(c1 - ic2)^2(D1 - iD2)g -e^{2it}
                                                      (a (d1 + id2) (2 C1 c2 + 2 c1 (-i C1 + C2) + i (2 c2 C2 + d1 D1 + i D1 d2 + i d1 D2 - d2 D2)) +
                                                                i(c1+ic2)^{2}(D1+iD2)g)+
                                                2 e^{i t} (a (-2 c1 C2 d1 - 2 c2 C2 d2 - 2 d1 D1 d2 - 2 i D1 d2<sup>2</sup> + 2 C1 (c2 d1 + c1 d2 + 2 i c2 d2) +
                                                                                 d1^2 D2 + d2^2 D2) + (c1 + i c2) (-2 c2 D1 + c1 D2 - i c2 D2) g) -
                                                2 e^{-i t} (a (-2 c1 C2 d1 - 2 c2 C2 d2 - 2 d1 D1 d2 + 2 i D1 d2<sup>2</sup> + 2 C1 (c2 d1 + c1 d2 - 2 i c2 d2) +
                                                                                  d1^2 D2 + d2^2 D2) + (c1 - i c2) (-2 c2 D1 + c1 D2 + i c2 D2) g) - 4
                                                       (a (d1 + i d2) (-2 c1 C1 - 2 i C1 c2 + 2 i c1 C2 - 2 c2 C2 + d1 D1 + i D1 d2 - i d1 D2 + d2 D2) +
                                                                 (c1 + i c2)^2 (D1 - i D2) g) t) Sin \left[\frac{t}{2}\right] - e^{\frac{it}{2}} C[2] Sin \left[\frac{t}{2}\right]
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In[*]:= ClearAll[z33temp]

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In[•]:= \frac{1}{8} e^{\frac{i}{2}t}
                                   \left(2\; e^{-i \; t} \; \left(a\; \left(-2\; c1\; C1\; d1+2\; c2\; C2\; d1+d1^2\; D1-2\; C1\; c2\; d2+D1\; d2^2+2\; c1\; C2\; \left(2\; i i \; d1+d2\right)\right.\right. \\ \left.-2\; i \; d1^2\; d1^2
                                                                                          D2 - 2 d1 d2 D2) + (c1 - i c2) (i c2 D1 + c1 (D1 - 2 i D2)) g) +
                                                2 e^{i t} (-a (2 c2 C2 d1 + d1<sup>2</sup> D1 - 2 C1 c2 d2 + D1 d2<sup>2</sup> - 2 c1 (C1 d1 + 2 i C2 d1 - C2 d2) +
                                                                                    2 \pm d1^2 D2 - 2 d1 d2 D2) - (c1 + \pm c2) (-\pm c2 D1 + c1 (D1 + 2 \pm D2)) g) + e^{-2 \pm t}
                                                       (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C2) - 2 c2 C2 - d1 D1 + i D1 d2 + i d1 D2 + d2 D2) - (a (d1 - i d2) (-2 i C1 c2 + 2 c1 (C1 - i C1 c2) - 2 c2 C2 - d1 D1 + i D1 d2 + 
                                                                  (c1 - i c2)^2 (D1 - i D2) g) +
                                              e^{2 \pm t} (a (d1 + \pm d2) (2 \pm C1 c2 + 2 c1 (C1 + \pm C2) - 2 c2 C2 - d1 D1 - \pm D1 d2 - \pm d1 D2 + d2 D2) -
                                                                   (c1 + i c2)^2 (D1 + i D2) g + 4
                                                       (a (-i d1 + d2) (-2 c1 C1 - 2 i C1 c2 + 2 i c1 C2 - 2 c2 C2 + d1 D1 + i D1 d2 - i d1 D2 + d2 D2) -
                                                                 \dot{\mathbf{n}} \left( c1 + \dot{\mathbf{n}} c2 \right)^2 \left( D1 - \dot{\mathbf{n}} D2 \right) g \right) t \cos \left[ \frac{t}{2} \right] + e^{\frac{\dot{\mathbf{n}} t}{2}} C[1] \cos \left[ \frac{t}{2} \right] - \frac{1}{8} e^{\frac{\dot{\mathbf{n}} t}{2}}
                                    \left(-\,e^{-2\,\,\dot{n}\,\,t}\,\,\left(a\,\,\left(d\,1\,-\,\dot{n}\,\,d\,2\right)\,\,\left(2\,\,C\,1\,\,c\,2\,\,-\,2\,\,\dot{n}\,\,c\,2\,\,C\,2\,\,+\,2\,\,c\,1\,\,\left(\dot{n}\,\,C\,1\,+\,C\,2\right)\,\,-\,\dot{n}\,\,d\,1\,\,D\,1\,\,-\,D\,1\,\,d\,2\,\,-\,d\,1\,\,D\,2\,\,+\,\,\dot{n}\,\,d\,2\,\,D\,2\right)\,\,-\,\left(2\,\,C\,1\,\,c\,2\,\,-\,2\,\,\dot{n}\,\,c\,2\,\,C\,2\,\,+\,2\,\,c\,1\,\,\left(\dot{n}\,\,C\,1\,+\,C\,2\right)\,\,-\,\,\dot{n}\,\,d\,1\,\,D\,1\,\,-\,D\,1\,\,d\,2\,\,-\,d\,1\,\,D\,2\,\,+\,\,\dot{n}\,\,d\,2\,\,D\,2\right)\,\,-\,\,\dot{n}\,\,d\,2\,\,D\,2\,\,+\,\,\dot{n}\,\,d\,2\,\,D\,2\,
                                                                 i (c1 - i c2)^2 (D1 - i D2) g) - e^{2it}
                                                       (a (d1 + id2) (2 C1 c2 + 2 c1 (-i C1 + C2) + i (2 c2 C2 + d1 D1 + i D1 d2 + i d1 D2 - d2 D2)) +
                                                                 i (c1 + i c2)^{2} (D1 + i D2) g) +
                                                2 e^{it} (a (-2 c1 C2 d1 - 2 c2 C2 d2 - 2 d1 D1 d2 - 2 i D1 d2<sup>2</sup> + 2 C1 (c2 d1 + c1 d2 + 2 i c2 d2) +
                                                                                    d1^2 D2 + d2^2 D2) + (c1 + i c2) (-2 c2 D1 + c1 D2 - i c2 D2) g) -
                                               2 e^{-i t} (a (-2 c1 C2 d1 - 2 c2 C2 d2 - 2 d1 D1 d2 + 2 i D1 d2<sup>2</sup> + 2 C1 (c2 d1 + c1 d2 - 2 i c2 d2) +
                                                                                    d1^2 D2 + d2^2 D2) + (c1 - i c2) (-2 c2 D1 + c1 D2 + i c2 D2) g) -
                                              4 (a (d1 + i d2) (-2 c1 C1 - 2 i C1 c2 + 2 i c1 C2 - 2 c2 C2 + d1 D1 + i D1 d2 - i d1 D2 + d2 D2) +
                                                                   (c1 + i c2)^2 (D1 - i D2) g) t) Sin \left[\frac{t}{2}\right] - e^{\frac{it}{2}} C[2] Sin \left[\frac{t}{2}\right]
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$$\begin{array}{c} \frac{1}{8}e^{\frac{i\tau}{2}} \\ & \left(2 e^{-i\,\,t} \left(a \left(-2 \, c1 \, C1 \, d1 + 2 \, c2 \, C2 \, d1 + d1^2 \, D1 - 2 \, C1 \, c2 \, d2 + D1 \, d2^2 + 2 \, c1 \, C2 \, \left(2 \, i \, d1 + d2\right) - 2 \, i \, d1^2 \right. \\ & \left. D2 - 2 \, d1 \, d2 \, D2\right) + \left(c1 - i \, c2\right) \, \left(i \, c2 \, D1 + c1 \, \left(D1 - 2 \, i \, D2\right)\right) \, g\right) + \\ & 2 \, e^{i\,\,t} \, \left(-a \, \left(2 \, c2 \, C2 \, d1 + d1^2 \, D1 - 2 \, C1 \, c2 \, d2 + D1 \, d2^2 - 2 \, c1 \, \left(C1 \, d1 + 2 \, i \, C2 \, d1 - C2 \, d2\right) + \\ & 2 \, i \, d1^2 \, D2 - 2 \, d1 \, d2 \, D2\right) - \left(c1 + i \, c2\right) \, \left(-i \, c2 \, D1 + c1 \, \left(D1 + 2 \, i \, D2\right)\right) \, g\right) + e^{-2 \, i \, \tau} \\ & \left(a \, \left(d1 - i \, d2\right) \, \left(-2 \, i \, C1 \, c2 + 2 \, c1 \, \left(C1 - i \, C2\right) - 2 \, c2 \, C2 - d1 \, D1 + i \, D1 \, d2 + i \, d1 \, D2 + d2 \, D2\right) - \\ & \left(c1 - i \, c2\right)^2 \, \left(D1 - i \, D2\right) \, g\right) + \\ & e^{2 \, i \, \tau} \left(a \, \left(d1 + i \, d2\right) \, \left(2 \, i \, C1 \, c2 + 2 \, c1 \, \left(C1 + i \, C2\right) - 2 \, c2 \, C2 - d1 \, D1 - i \, D1 \, d2 - i \, d1 \, D2 + d2 \, D2\right) - \\ & \left(c1 + i \, c2\right)^2 \, \left(D1 + i \, D2\right) \, g\right) + 4 \\ & \left(a \, \left(-i \, d1 + d2\right) \, \left(-2 \, c1 \, C1 \, - 2 \, i \, C1 \, c2 + 2 \, i \, c1 \, C2 - 2 \, c2 \, C2 + d1 \, D1 + i \, D1 \, d2 - i \, d1 \, D2 + d2 \, D2\right) - \\ & i \, \left(c1 + i \, c2\right)^2 \, \left(D1 - i \, D2\right) \, g\right) \, t\right) \, \cos\left[\frac{t}{2}\right] + e^{\frac{i\tau}{2}} \, C[1] \, \cos\left[\frac{t}{2}\right] - \frac{1}{8} \, e^{\frac{i\tau}{2}} \\ & \left(-e^{-2 \, i \, \tau} \, \left(a \, \left(d1 - i \, d2\right) \, \left(2 \, C1 \, c2 - 2 \, i \, c2 \, C2 \, c2 \, 2 \, c1 \, \left(i \, C1 + C2\right) - i \, d1 \, D1 - D1 \, d2 - d1 \, D2 + i \, d2 \, D2\right) - \\ & i \, \left(c1 - i \, c2\right)^2 \, \left(D1 - i \, D2\right) \, g\right) - e^{2 \, i \, \tau} \\ & \left(a \, \left(d1 + i \, d2\right) \, \left(2 \, C1 \, c2 + 2 \, c1 \, \left(-i \, C1 + C2\right) + i \, \left(2 \, c2 \, C2 + d1 \, D1 + i \, D1 \, d2 - d1 \, D2 + i \, d2 \, D2\right) + \\ & i \, \left(c1 - i \, c2\right)^2 \, \left(D1 - i \, D2\right) \, g\right) + 2 \, e^{2 \, i \, \tau} \\ & \left(a \, \left(d1 + i \, d2\right) \, \left(2 \, C1 \, c2 + 2 \, c1 \, \left(-i \, c1 \, c2\right) + i \, \left(2 \, c2 \, C2 \, d1 \, D1 + i \, D1 \, d2 + i \, d1 \, D2 - d2 \, D2\right)\right) + \\ & \left(c1 + i \, c2\right)^2 \, \left(D1 + i \, D2\right) \, g\right) + 2 \, e^{2 \, i \, \tau} \\ & \left(a \, \left(d1 + i \, d2\right) \, \left(2 \, C2 \, c2 \, d2 - 2 \, c1 \, d1 \, D1 \, d2 - 2 \, i \, D1 \, d2^2 + 2 \, C1 \, \left(2 \, d1 + c1 \, d2 + 2 \, i \, c2 \, d2\right)\right) + \\ & \left(d1 + i \, d2\right)$$

Info]:= TrigReduce[%406]

 $Out[*]=-\frac{1}{4}$ a c1 C1 d1 $-\frac{1}{4}$ i a C1 c2 d1 $+\frac{3}{4}$ i a c1 C2 d1 $+\frac{1}{4}$ a c2 C2 d1 $+\frac{1}{4}$ a d1² D1 $-\frac{1}{4}$ i a c1 C1 d2 $-\frac{1}{4}$ $\frac{3}{4}$ a C1 c2 d2 + $\frac{1}{4}$ a c1 C2 d2 + $\frac{1}{4}$ i a c2 C2 d2 + $\frac{1}{4}$ i a d1 D1 d2 + $\frac{3}{2}$ a D1 d2² - $\frac{3}{2}$ i a d1² D2 - $\frac{1}{4}$ a d1 d2 D2 $-\frac{1}{8}$ <u>i</u> a d2² D2 $+\frac{1}{4}$ a c1 C1 d1 $e^{i t} - \frac{1}{4}$ <u>i</u> a C1 c2 d1 $e^{i t} + \frac{3}{4}$ <u>i</u> a c1 C2 d1 $e^{i t} - \frac{1}{4}$ $\frac{1}{4} \text{ a c2 C2 d1 } e^{i \, t} - \frac{1}{2} \text{ a d1}^2 \text{ D1 } e^{i \, t} - \frac{1}{4} \text{ i a c1 C1 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 } e^{i \, t} - \frac{1}{4} \text{ a c1 C2 d2 } e^{i \, t} + \frac{3}{4} \text{ a C1 c2 d2 }$ $\frac{1}{4}$ i a c2 C2 d2 $e^{it} + \frac{1}{4}$ i a d1 D1 d2 $e^{it} - \frac{3}{9}$ a D1 d2² $e^{it} - \frac{3}{9}$ i a d1² D2 $e^{it} + \frac{1}{4}$ a d1 d2 D2 $e^{it} - \frac{3}{9}$ $\frac{1}{2} \pm a \, d2^2 \, D2 \, e^{i \, t} + \frac{1}{2} \, a \, c1 \, C1 \, d1 \, e^{2 \, i \, t} + \frac{1}{2} \pm a \, C1 \, c2 \, d1 \, e^{2 \, i \, t} + \frac{1}{2} \pm a \, c1 \, C2 \, d1 \, e^{2 \, i \, t} - \frac{1}{2} \pm a \, c1 \, C2 \, d1 \, e^{2 \, i \, t} + \frac{1}{2} \pm a \, c1 \, C2 \, d1 \, e^{2 \, i \, t} - \frac{1}{2} \pm a \, c1 \, C2 \, d1$ $\frac{1}{2}$ a c2 C2 d1 $e^{2it} - \frac{1}{4}$ a d1² D1 $e^{2it} + \frac{1}{2}$ i a c1 C1 d2 $e^{2it} - \frac{1}{2}$ a C1 c2 d2 $e^{2it} - \frac{1}{2}$ $\frac{1}{4}$ i a d1² D2 $e^{2 i t}$ + $\frac{1}{2}$ a d1 d2 D2 $e^{2 i t}$ + $\frac{1}{4}$ i a d2² D2 $e^{2 i t}$ + $\frac{1}{8}$ c1² D1 g + $\frac{1}{4}$ i c1 c2 D1 g + $\frac{3}{9} \text{ c2}^2 \text{ D1 g} - \frac{3}{9} \pm \text{ c1}^2 \text{ D2 g} - \frac{1}{4} \text{ c1 c2 D2 g} - \frac{1}{9} \pm \text{ c2}^2 \text{ D2 g} - \frac{1}{9} \text{ c1}^2 \text{ D1 e}^{i \, t} \text{ g} + \frac{1}{4} \pm \text{ c1 c2 D1 e}^{i \, t} \text{ g} - \frac{1}{9} \pm \text{ c1}^2 \text{ D1 e}^{i \, t} \text{ g}$ $\frac{3}{8} c2^{2} D1 e^{it} g - \frac{3}{8} i c1^{2} D2 e^{it} g + \frac{1}{4} c1 c2 D2 e^{it} g - \frac{1}{8} i c2^{2} D2 e^{it} g - \frac{1}{4} c1^{2} D1 e^{2it} g - \frac{1}{8} c1^{2} D1 e^{2it} g - \frac{1}{$ $\frac{1}{2} \pm c1 \, c2 \, D1 \, e^{2 \pm t} \, g + \frac{1}{4} \, c2^2 \, D1 \, e^{2 \pm t} \, g - \frac{1}{4} \pm c1^2 \, D2 \, e^{2 \pm t} \, g + \frac{1}{2} \, c1 \, c2 \, D2 \, e^{2 \pm t} \, d2 \,$ $\frac{1}{4} \pm c2^{2} D2 e^{2 \pm t} g + \pm a c1 C1 d1 e^{\pm t} t - a C1 c2 d1 e^{\pm t} t + a c1 C2 d1 e^{\pm t} t + \pm a c2 C2 d1 e^{\pm t} t - a C1 c2 d1 e^{\pm t} t + a c1 C2 d1 e^{\pm t} t + a c2 C2 d1 e^{\pm t} t + a c2$ $\frac{1}{2} \pm a \ d1^2 \ D1 \ e^{i \ t} \ t - a \ c1 \ C1 \ d2 \ e^{i \ t} \ t - \pm a \ c1 \ c2 \ d2 \ e^{i \ t} \ t + \pm a \ c1 \ C2 \ d2 \ e^{i \ t} \ t$ a c2 C2 d2 $e^{it}t + a$ d1 D1 d2 $e^{it}t + \frac{1}{2}i$ a D1 d2² $e^{it}t - \frac{1}{2}a$ d1² D2 $e^{it}t - i$ a d1 d2 D2 $e^{it}t + \frac{1}{2}a$

 $log_{*} := -\frac{1}{4} \text{ a c1 C1 d1} - \frac{1}{4} \text{ is a C1 c2 d1} + \frac{3}{4} \text{ is a c1 C2 d1} + \frac{1}{4} \text{ a c2 C2 d1} + \frac{1}{2} \text{ a d1}^2 \text{ D1} - \frac{1}{4} \text{ c2 C2 d1} + \frac{1}{4} \text{ c2 C2 d2} + \frac{1}{4} \text{ c$ $\frac{1}{4}$ \pm a c1 C1 d2 - $\frac{3}{4}$ a C1 c2 d2 + $\frac{1}{4}$ a c1 C2 d2 + $\frac{1}{4}$ \pm a c2 C2 d2 + $\frac{1}{4}$ \pm a d1 D1 d2 + $\frac{3}{2}$ a D1 d2² - $\frac{3}{9}$ i a d1² D2 - $\frac{1}{4}$ a d1 d2 D2 - $\frac{1}{9}$ i a d2² D2 + $\frac{1}{4}$ a c1 C1 d1 e^{i t} - $\frac{1}{4}$ i a C1 c2 d1 e^{i t} + $\frac{3}{4}$ i a c1 C2 d1 e^{it} - $\frac{1}{4}$ a c2 C2 d1 e^{it} - $\frac{1}{2}$ a d1² D1 e^{it} - $\frac{1}{4}$ i a c1 C1 d2 e^{it} + $\frac{3}{4}$ a C1 c2 d2 e^{it} - $\frac{1}{4}$ a c1 C2 d2 e^{it} + $\frac{1}{4}$ i a c2 C2 d2 e^{it} + $\frac{1}{4}$ i a d1 D1 d2 e^{it} - $\frac{3}{8}$ a D1 d2² e^{it} - $\frac{3}{8}$ i a d1² D2 e^{it} + $\frac{1}{4}$ a d1 d2 D2 e^{it} - $\frac{1}{8}$ ii a d2² D2 e^{it} + $\frac{1}{2}$ a c1 C1 d1 e^{2 it} + $\frac{1}{2} \pm a C1 c2 d1 e^{2 \pm t} + \frac{1}{2} \pm a c1 C2 d1 e^{2 \pm t} - \frac{1}{2} a c2 C2 d1 e^{2 \pm t} - \frac{1}{4} a d1^{2} D1 e^{2 \pm t} +$ $\frac{1}{2}$ i a c1 C1 d2 e^{2it} - $\frac{1}{2}$ a C1 c2 d2 e^{2it} - $\frac{1}{2}$ a c1 C2 d2 e^{2it} - $\frac{1}{2}$ i a c2 C2 d2 e^{2it} - $\frac{1}{4}$ is a d2² D2 e^{2 i t} + $\frac{1}{8}$ c1² D1 g + $\frac{1}{4}$ is c1 c2 D1 g + $\frac{3}{8}$ c2² D1 g - $\frac{3}{8}$ is c1² D2 g - $\frac{1}{4}$ c1 c2 D2 g - $\frac{1}{9} \pm c2^{2} D2 g - \frac{1}{9} c1^{2} D1 e^{it} g + \frac{1}{4} \pm c1 c2 D1 e^{it} g - \frac{3}{9} c2^{2} D1 e^{it} g - \frac{3}{9} \pm c1^{2} D2 e^{it} g +$ $\frac{1}{4} \text{ c1 c2 D2 } e^{i t} g - \frac{1}{2} i \text{ c2}^2 \text{ D2 } e^{i t} g - \frac{1}{4} \text{ c1}^2 \text{ D1 } e^{2 i t} g - \frac{1}{2} i \text{ c1 c2 D1 } e^{2 i t} g + \frac{1}{4} \text{ c2}^2 \text{ D1 } e^{2 i t} g - \frac{1}{4} \text{ c2}^2 \text{ D1$ $\frac{1}{4} \pm c1^2 D2 e^{2 \pm t} g + \frac{1}{2} c1 c2 D2 e^{2 \pm t} g + \frac{1}{4} \pm c2^2 D2 e^{2 \pm t} g + \pm a c1 C1 d1 e^{\pm t} t$ a C1 c2 d1 e^{it} t + a c1 C2 d1 e^{it} t + i a c2 C2 d1 e^{it} t - $\frac{1}{2}$ i a d1² D1 e^{it} t - a c1 C1 d2 e^{it} t i a C1 c2 d2 e^{it} t + i a c1 C2 d2 e^{it} t - a c2 C2 d2 e^{it} t + a d1 D1 d2 e^{it} t + $\frac{1}{2}$ i a D1 d2² e^{it} t - $\frac{1}{2}$ a d1² D2 e^{it}t - i a d1 d2 D2 e^{it}t + $\frac{1}{2}$ a d2² D2 e^{it}t - $\frac{1}{2}$ i c1² D1 e^{it} gt + $c1 c2 D1 e^{it} gt + \frac{1}{2} i c2^{2} D1 e^{it} gt - \frac{1}{2} c1^{2} D2 e^{it} gt - i c1 c2 D2 e^{it} gt + \frac{1}{2} c2^{2} D2 e^{it} gt$

In[@]:= Collect[%, t * Exp[I * t]]

Inf@]:= Collect[z33temp, t*Exp[I*t]]

$$\begin{array}{l} c_{\text{out}+\text{l}-} & -\frac{1}{4} \text{ a c1 C1 d1} - \frac{1}{4} \text{ i a C1 c2 d1} + \frac{3}{4} \text{ i a c1 C2 d1} + \frac{1}{4} \text{ a c2 C2 d1} + \frac{1}{8} \text{ a d1}^2 \text{ D1} - \frac{1}{4} \text{ i a c1 C1 d2} - \frac{3}{4} \text{ a c1 C2 d2} + \frac{1}{4} \text{ i a c2 C2 d2} + \frac{1}{4} \text{ i a d1 D1 d2} + \frac{3}{8} \text{ a D1 d2}^2 - \frac{3}{8} \text{ i a d1}^2 \text{ D2} - \frac{1}{4} \text{ a d1 d2 D2} - \frac{1}{8} \text{ i a d2}^2 \text{ D2} + \frac{1}{4} \text{ a c1 C1 d1 e}^{\text{ i t}} - \frac{1}{4} \text{ i a C1 c2 d1 e}^{\text{ i t}} + \frac{3}{4} \text{ i a c1 C2 d1 e}^{\text{ i t}} - \frac{1}{4} \text{ a c1 C2 d2 e}^{\text{ i t}} + \frac{1}{4} \text{ a c1 C2 d2 e}^{\text{ i t}} + \frac{1}{4} \text{ a c1 C2 d2 e}^{\text{ i t}} + \frac{1}{4} \text{ a c1 C2 d2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 D1 d2 e}^{\text{ i t}} - \frac{3}{8} \text{ a D1 d2}^2 \text{ e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{3}{8} \text{ i a d1}^2 \text{ D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a c1 C2 d1 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{3}{8} \text{ i a d1}^2 \text{ D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{ i t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text$$

$$\begin{split} \inf_{\{e\}:=} \; & \dot{\mathbf{i}} \; \text{a c1 C1 d1} - \text{a C1 c2 d1} + \text{a c1 C2 d1} + \dot{\mathbf{i}} \; \text{a c2 C2 d1} - \frac{1}{2} \, \dot{\mathbf{i}} \; \text{a d1}^2 \; \text{D1} - \text{a c1 C1 d2} - \dot{\mathbf{i}} \; \text{a C1 c2 d2} + \\ & \dot{\mathbf{i}} \; \text{a c1 C2 d2} - \text{a c2 C2 d2} + \text{a d1 D1 d2} + \frac{1}{2} \, \dot{\mathbf{i}} \; \text{a D1 d2}^2 - \frac{1}{2} \, \text{a d1}^2 \; \text{D2} - \dot{\mathbf{i}} \; \text{a d1 d2 D2} + \\ & \frac{1}{2} \; \text{a d2}^2 \; \text{D2} - \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c1}^2 \; \text{D1 g} + \text{c1 c2 D1 g} + \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c2}^2 \; \text{D1 g} - \frac{1}{2} \, \text{c1}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \, \text{c2}^2 \; \text{D2 g} \\ & \underbrace{\text{out}_{\{e\}:=}} \; \dot{\mathbf{i}} \; \text{a c1 C1 d1} - \text{a C1 c2 d1} + \text{a c1 C2 d1} + \dot{\mathbf{i}} \; \text{a c2 C2 d1} - \frac{1}{2} \, \dot{\mathbf{i}} \; \text{a d1}^2 \; \text{D1} - \text{a c1 C1 d2} - \dot{\mathbf{i}} \; \text{a C1 c2 d2} + \\ & \dot{\mathbf{i}} \; \text{a c1 C2 d2} - \text{a c2 C2 d2} + \text{a d1 D1 d2} + \frac{1}{2} \, \dot{\mathbf{i}} \; \text{a D1 d2}^2 - \frac{1}{2} \, \text{a d1}^2 \; \text{D2} - \dot{\mathbf{i}} \; \text{a d1 d2 D2} + \\ & \frac{1}{2} \; \text{a d2}^2 \; \text{D2} - \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c1}^2 \; \text{D1 g} + \text{c1 c2 D1 g} + \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c2}^2 \; \text{D1 g} - \frac{1}{2} \; \text{c1}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{a d2}^2 \; \text{D2} - \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c1}^2 \; \text{D1 g} + \text{c1 c2 D1 g} + \frac{1}{2} \, \dot{\mathbf{i}} \; \text{c2}^2 \; \text{D1 g} - \frac{1}{2} \; \text{c1}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} - \dot{\mathbf{i}} \; \text{c1 c2 D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} + \frac{1}{2} \; \text{c2}^2 \; \text{D2 g} \\ & \frac{1}{2} \; \text$$

In[•]:= **z3st**

$$\textit{Out[*]} = \left(-\frac{1}{2} \, \text{i} \, d2 \, \text{e}^{\text{i} \, \text{t}} \, \left(-1 + \text{e}^{-\text{i} \, \text{t}} \right) \, + \, \frac{1}{2} \, d1 \, \text{e}^{\text{i} \, \text{t}} \, \left(1 + \text{e}^{-\text{i} \, \text{t}} \right) \right) \, s \, + \, s^3 \, z \, 33$$

$$\begin{aligned} & \mathit{id} = i \text{ a c1 } C1 \text{ C1 } d1 - a \text{ C1 } c2 \text{ d1} + a \text{ c1 } C2 \text{ d1} + i \text{ a c2 } c2 \text{ d1} - \frac{1}{2} \text{ is a d1}^2 \text{ D1} - a \text{ c1 } C1 \text{ d2} - i \text{ a C1 } c2 \text{ d2} + \\ & \text{ is a c1 } C2 \text{ d2} - a \text{ c2 } C2 \text{ d2} + a \text{ d1 D1 } d2 + \frac{1}{2} \text{ is a D1 } d2^2 - \frac{1}{2} \text{ a d1}^2 \text{ D2} - i \text{ a d1 } d2 \text{ D2} + \frac{1}{2} \text{ a d2}^2 \text{ D2} - \\ & \frac{1}{2} \text{ is } \text{ c1}^2 \text{ D1 } \text{ g + c1 } c2 \text{ D1 } \text{ g} + \frac{1}{2} \text{ is } \text{ c2}^2 \text{ D1 } \text{ g} - \frac{1}{2} \text{ c1}^2 \text{ D2 } \text{ g} - \text{ is } \text{ c1 } \text{ c2 } \text{ D2 } \text{ g} + \frac{1}{2} \text{ c2}^2 \text{ D2 } \text{ g} / . \\ & \text{ (d1 } \rightarrow \text{ c, D1 } \rightarrow \text{ k, d2 } \rightarrow \text{ I * c, D2 } \rightarrow \text{ I * k)} \end{aligned}$$

$$\begin{array}{l} c_{\text{Oull}+\text{P}} = \frac{1}{8} \, e^{\frac{1 \, t}{2}} \left(e^{-2 \, i \, t} \right. \\ & \left. \left(a \, \left(i \, c \, 1 + c \, 2 \right) \, \left(-i \, C \, 1 \, c \, 2 + c \, 1 \, \left(C \, 1 - i \, C \, 2 \right) - c \, 2 \, C \, 2 - 2 \, d \, 1 \, D \, 1 + 2 \, i \, D \, 1 \, d \, 2 + 2 \, i \, d \, 1 \, D \, 2 + 2 \, d \, 2 \, D \, 2 \right) \, + \\ & \left. \left(i \, C \, 1 + c \, 2 \right) \, \left(d \, 1 - i \, d \, 2 \right)^2 \, G \right) \, + e^{2 \, i \, t} \, \left(a \, \left(c \, 1 + i \, c \, 2 \right) \, \left(C \, 1 \, c \, 2 + c \, 1 \, \left(-i \, C \, 1 + c \, 2 \right) \, \right) \, + \\ & \left. i \, \left(c \, 2 \, C \, 2 \, 2 \, d \, 1 \, D \, 1 + 2 \, i \, D \, 1 \, d \, 2 + 2 \, i \, d \, 1 \, D \, 2 - 2 \, d \, 2 \, D \, 2 \right) \right) \, + \left(-i \, C \, 1 + c \, 2 \right) \, \left(d \, 1 + i \, d \, 2 \right)^2 \, G \right) \, + \\ & \left. 2 \, e^{i \, t} \, \left(a \, \left(c \, 1^2 \, C \, 2 \, - 2 \, c \, 1 \, \left(C \, 1 \, c \, 2 - D \, 1 \, d \, 2 + d \, 1 \, D \, 2 \right) + c \, \left(\, 2 \, \left(\, 1 \, c \, 1 \, d \, 2 \right) - 2 \, C \, 1 \, d \, 2 \right) \, G \right) \, - \\ & \left. 4 \, i \, D \, 1 \, d \, 2 \, - 2 \, d \, 2 \, D \, 2 \right) \right) \, + \left(d \, 1 \, - i \, d \, 2 \right) \, \left(\, 2 \, \left(\, d \, 1 \, - i \, d \, 2 \right) \, - 2 \, C \, 1 \, d \, 2 \, \right) \, G \right) \, - \\ & \left. 2 \, e^{-i \, t} \, \left(a \, \left(c \, 1^2 \, c \, 2 \, - 2 \, c \, 1 \, \left(C \, 1 \, - 2 \, - 1 \, D \, 2 \, + d \, 1 \, D \, 2 \right) + c \, 2 \, \left(2 \, 1 \, c \, 1 \, c \, 2 \, C \, 2 \, 2 \, 2 \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, D \, - 2 \, c \, 2 \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 1 \, - 2 \, c \, 1 \, D \, 2 \, - 2 \, d \, 2 \, D \, 2 \right) \, + \, - \left. \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, d \, 1 \, - \, i \, d \, 2 \, \right) \, \left. \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left. \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left(c \, 1 \, - \, i \, c \, 2 \, \right) \, \left. \left(c \, 1 \, c \, a \, c \, 1 \, c \, a \, c \, c \, 1 \, c \, a \, c \, a \, c \,$$

Info]:= TrigReduce[%414]

Out[*]= $-\frac{1}{8}$ i a c1² C1 + $\frac{1}{4}$ a c1 C1 c2 - $\frac{3}{8}$ i a C1 c2² - $\frac{3}{8}$ a c1² C2 + $\frac{1}{4}$ i a c1 c2 C2 - $\frac{1}{8}$ a c2² C2 + $\frac{1}{4}$ i a c1 d1 D1 - $\frac{1}{4}$ a c2 d1 D1 - $\frac{1}{4}$ a c1 D1 d2 + $\frac{3}{4}$ i a c2 D1 d2 + $\frac{3}{4}$ a c1 d1 D2 - $\frac{1}{4}$ i a c2 d1 D2 - $\frac{1}{4}$ i a c1 d2 D2 + $\frac{1}{4}$ a c2 d2 D2 + $\frac{1}{4}$ i a c1² C1 e^{-it} + $\frac{1}{2}$ a c1 C1 c2 e^{-it} - $\frac{1}{4}$ i a C1 c2² e^{-it} + $\frac{1}{4} \text{ a c1}^2 \text{ C2 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ i a c1 c2 C2 } \text{ e}^{-\text{i t}} - \frac{1}{4} \text{ a c2}^2 \text{ C2 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ i a c1 d1 D1 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ e}^{-\text{i$ $\frac{1}{2} \text{ a c2 d1 D1 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ a c1 D1 d2 } \text{ e}^{-\text{i t}} + \frac{1}{2} \text{ i a c2 D1 d2 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ a c1 d1 D2 } \text{ e}^{-\text{i t}} + \frac{1}{2} \text{ e}^{-\text{i t}} + \frac{$ $\frac{1}{4}$ a c1 C1 c2 $e^{it} - \frac{3}{8}$ i a C1 c2² $e^{it} + \frac{3}{8}$ a c1² C2 $e^{it} + \frac{1}{4}$ i a c1 c2 C2 $e^{it} + \frac{1}{8}$ a c2² C2 $e^{it} + \frac{1}{8}$ $\frac{1}{4} \, \, \dot{\mathbf{1}} \, \, \, \mathbf{a} \, \, \mathbf{c1} \, \, \mathbf{d1} \, \, \mathbf{D1} \, \, \mathbf{e}^{\mathbf{i} \, \, \mathbf{t}} \, + \, \frac{1}{4} \, \, \mathbf{a} \, \, \mathbf{c2} \, \, \mathbf{d1} \, \, \mathbf{D1} \, \, \mathbf{e}^{\mathbf{i} \, \, \mathbf{t}} \, + \, \frac{1}{4} \, \, \mathbf{a} \, \, \mathbf{c1} \, \, \mathbf{D1} \, \, \mathbf{d2} \, \, \mathbf{e}^{\mathbf{i} \, \, \mathbf{t}} \, + \, \frac{3}{4} \, \, \dot{\mathbf{1}} \, \, \mathbf{a} \, \, \mathbf{c2} \, \, \mathbf{D1} \, \, \mathbf{d2} \, \, \mathbf{e}^{\mathbf{i} \, \, \mathbf{t}} \, - \, \mathbf{e}^{\mathbf{i} \, \, \mathbf{t}} \, + \, \mathbf{e}^$ $\frac{3}{4} \text{ a c1 d1 D2 } \text{ e}^{\text{i t}} - \frac{1}{4} \text{ i a c2 d1 D2 } \text{ e}^{\text{i t}} - \frac{1}{4} \text{ i a c1 d2 D2 } \text{ e}^{\text{i t}} - \frac{1}{4} \text{ a c2 d2 D2 } \text{ e}^{\text{i t}} - \frac{1}{9} \text{ i C1 d1}^2 \text{ G} - \frac{1}{12} \text{ a c2 d2 D2 } \text{ e}^{\text{i t}} - \frac{1}{9} \text{ e}^{\text{i t}} - \frac{1}{9} \text{ e}^{\text{i t}} + \frac{1}{9} \text{ e}^{\text{i$ $\frac{1}{4} \text{ C2 d1}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} + \frac{1}{2} \, \text{C1 d1 d2} \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{2} \, \text{i} \, \text{C2 d1 d2} \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{i} \, \text{C1 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{c} \, \text{C1 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{c} \, \text{C2 d1 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, \text{e}^{-\text{i} \, \text{t}} \,$ $\frac{1}{4} \text{ C2 d2}^2 \, \text{e}^{-\text{i}\,\text{t}\,\text{G}} \, - \, \frac{1}{2} \, \text{i} \, \text{C1 d1}^2 \, \text{e}^{\text{i}\,\text{t}\,\text{G}} \, + \, \frac{3}{2} \, \text{C2 d1}^2 \, \text{e}^{\text{i}\,\text{t}\,\text{G}} \, - \, \frac{1}{4} \, \text{C1 d1 d2} \, \text{e}^{\text{i}\,\text{t}\,\text{G}} \, + \, \frac{1}{4} \, \text{i} \, \text{C2 d1 d2} \, \text{e}^{\text{i}\,\text{t}\,\text{G}} \, - \, \frac{1}{4} \, \text{C2 d2} \, \text{C2 d2}^2 \, \text{C2 d2}^2 \, + \, \frac{1}{4} \, \text{C2 d2}^2 \, \text{C2 d2}^2 \, + \, \frac{1}{4} \, + \, \frac{1}{4}$ $\frac{3}{2} \pm C1 \, d2^2 \, e^{i \, t} \, G + \frac{1}{2} \, C2 \, d2^2 \, e^{i \, t} \, G - \frac{1}{2} \, a \, c1^2 \, C1 \, e^{i \, t} \, t - \pm a \, c1 \, C1 \, c2 \, e^{i \, t} \, t + \frac{1}{2} \, a \, C1 \, c2^2 \, e^{i \, t} \, t + \frac{1}{2} \, a \, C1 \, c2^2 \, e^{i \, t} \, d$ $\frac{1}{2} \pm a \, \text{c1}^2 \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \text{t-ac1} \, \text{c2} \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \text{t-} \, \frac{1}{2} \pm a \, \text{c2}^2 \, \text{C2} \, \text{e}^{\text{i} \, \text{t}} \, \text{t+ac1} \, \text{d1} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{t+iac2} \, \text{d1} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{t+ac2} \, \text{d1} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{t+ac2} \, \text{d2} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{t+ac2} \, \text{d2} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{d2} \, \textD2} \, \textD2} \, \textD2} \, \text{D2} \, \textD2} \, \textD2} \, \textD2} \, \textD2} \, \textD2} \, \textD2} \,$ $\verb"i a c2 d2 D2 e" t - \frac{1}{2} C1 d1^2 e" t G t + \frac{1}{2} \verb"i C2 d1^2 e" t G t - \verb"i C1 d1 d2 e" t G t - C2 d1 d2 e" t G t + C2 d1 d2 e" t G t +$ $\frac{1}{2} \text{ C1 d2}^2 \, e^{i \, t} \, \text{G t} - \frac{1}{2} \, i \, \text{C2 d2}^2 \, e^{i \, t} \, \text{G t} + \frac{1}{2} \, i \, \text{C[1]} - \frac{1}{2} \, i \, e^{i \, t} \, \text{C[1]} + \frac{\text{C[2]}}{2} + \frac{1}{2} \, e^{i \, t} \, \text{C[2]}$

 $ln[*] = p23 \text{temp} := -\frac{1}{9} \pm a c1^2 C1 + \frac{1}{4} a c1 C1 c2 - \frac{3}{9} \pm a C1 c2^2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} \pm a c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{1}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{3}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{3}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 + \frac{3}{4} a c1 c1 c2 C2 - \frac{3}{9} a c1^2 C2 - \frac{3}{9} a c1^2$ $\frac{1}{9}$ a c2² C2 + $\frac{1}{4}$ i a c1 d1 D1 - $\frac{1}{4}$ a c2 d1 D1 - $\frac{1}{4}$ a c1 D1 d2 + $\frac{3}{4}$ i a c2 D1 d2 + $\frac{3}{4}$ a c1 d1 D2 - $\frac{1}{4}$ is a c2 d1 D2 - $\frac{1}{4}$ is a c1 d2 D2 + $\frac{1}{4}$ a c2 d2 D2 + $\frac{1}{4}$ is a c1² C1 e^{-i t} + $\frac{1}{2}$ a c1 C1 c2 e^{-i t} - $\frac{1}{4}$ is a C1 c2² e^{-it} + $\frac{1}{4}$ a c1² C2 e^{-it} - $\frac{1}{2}$ is a c1 c2 C2 e^{-it} - $\frac{1}{4}$ a c2² C2 e^{-it} - $\frac{1}{2}$ is a c1 d1 D1 e^{-it} - $\frac{1}{2}$ a c2 d1 D1 e^{-it} - $\frac{1}{2}$ a c1 D1 d2 e^{-it} + $\frac{1}{2}$ i a c2 D1 d2 e^{-it} - $\frac{1}{2}$ a c1 d1 D2 e^{-it} + $\frac{1}{2}$ i a c2 d1 D2 $e^{-it} + \frac{1}{2}$ i a c1 d2 D2 $e^{-it} + \frac{1}{2}$ a c2 d2 D2 $e^{-it} - \frac{1}{8}$ i a c1² C1 $e^{it} - \frac{1}{8}$ $\frac{1}{4}$ a c1 C1 c2 e^{it} - $\frac{3}{9}$ ii a C1 c2² e^{it} + $\frac{3}{9}$ a c1² C2 e^{it} + $\frac{1}{4}$ ii a c1 c2 C2 e^{it} + $\frac{1}{9}$ a c2² C2 e^{it} + $\frac{1}{4}$ i a c1 d1 D1 e^{it} + $\frac{1}{4}$ a c2 d1 D1 e^{it} + $\frac{1}{4}$ a c1 D1 d2 e^{it} + $\frac{3}{4}$ i a c2 D1 d2 e^{it} - $\frac{3}{4}$ a c1 d1 D2 e^{it} - $\frac{1}{4}$ is a c2 d1 D2 e^{it} - $\frac{1}{4}$ is a c1 d2 D2 e^{it} - $\frac{1}{4}$ a c2 d2 D2 e^{it} - $\frac{1}{2}$ is C1 d1² G - $\frac{3}{2}$ C2 d1² G + $\frac{1}{4} \text{ C1 d1 d2 G} + \frac{1}{4} \pm \text{ C2 d1 d2 G} - \frac{3}{8} \pm \text{ C1 d2}^2 \text{ G} - \frac{1}{8} \text{ C2 d2}^2 \text{ G} + \frac{1}{4} \pm \text{ C1 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm \pm} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\pm} \text{ e}^{-\pm} \text{ C2 d1}^2 \text{ e}^{-\pm} \text{ e$ $\frac{1}{2} \text{ C1 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{2} \text{ i C2 d1 d2 } e^{-i \cdot t} \text{ G} - \frac{1}{4} \text{ i C1 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{4} \text{ C2 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{2} \text{ i C1 d1}^2 e^{i \cdot t} \text{ G} + \frac{1}{4} \text{ C2 d2}^2 e^{-i \cdot t} \text{ G} - \frac{1}{4}$ $\frac{3}{9} C2 d1^{2} e^{i t} G - \frac{1}{4} C1 d1 d2 e^{i t} G + \frac{1}{4} i C2 d1 d2 e^{i t} G - \frac{3}{9} i C1 d2^{2} e^{i t} G + \frac{1}{9} C2 d2^{2} e^{i t} G - \frac{$ $\frac{1}{2} a c1^{2} C1 e^{it} t - i a c1 C1 c2 e^{it} t + \frac{1}{2} a C1 c2^{2} e^{it} t + \frac{1}{2} i a c1^{2} C2 e^{it} t - a c1 c2 C2$ $\frac{1}{2}$ <u>i</u> a c2² C2 e^{it} t + a c1 d1 D1 e^{it} t + <u>i</u> a c2 d1 D1 e^{it} t + <u>i</u> a c1 D1 d2 e^{it} t - a c2 D1 d2 e^{it} t i a c1 d1 D2 e^{it} t + a c2 d1 D2 e^{it} t + a c1 d2 D2 e^{it} t + i a c2 d2 D2 e^{it} t - $\frac{1}{2}$ C1 d1² e^{it} G t + $\frac{1}{2} \pm C2 \, d1^2 \, e^{\pm t} \, G \, t - \pm C1 \, d1 \, d2 \, e^{\pm t} \, G \, t - C2 \, d1 \, d2 \, e^{\pm t} \, G \, t + \frac{1}{2} \, C1 \, d2^2 \, e^{\pm t} \, G \, t - \frac{1}{2} \pm C2 \, d2^2 \, e^{\pm t} \, G \, t$

Inf@]:= Collect[p23temp, t*Exp[I*t]]

Out[*]= $-\frac{1}{2}$ i a c1² C1 + $\frac{1}{4}$ a c1 C1 c2 - $\frac{3}{2}$ i a C1 c2² - $\frac{3}{2}$ a c1² C2 + $\frac{1}{4}$ i a c1 c2 C2 - $\frac{1}{2}$ a c2² C2 + $\frac{1}{4}$ i a c1 d1 D1 - $\frac{1}{4}$ a c2 d1 D1 - $\frac{1}{4}$ a c1 D1 d2 + $\frac{3}{4}$ i a c2 D1 d2 + $\frac{3}{4}$ a c1 d1 D2 - $\frac{1}{4}$ i a c2 d1 D2 - $\frac{1}{4}$ i a c1 d2 D2 + $\frac{1}{4}$ a c2 d2 D2 + $\frac{1}{4}$ i a c1² C1 e^{-it} + $\frac{1}{2}$ a c1 C1 c2 e^{-it} - $\frac{1}{4}$ i a C1 c2² e^{-it} + $\frac{1}{4} \text{ a c1}^2 \text{ C2 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ i a c1 c2 C2 } \text{ e}^{-\text{i t}} - \frac{1}{4} \text{ a c2}^2 \text{ C2 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ i a c1 d1 D1 } \text{ e}^{-\text{i t}} - \frac{1}{2} \text{ c2} \text{ c2} \text{ c3} + \frac{1}{2} \text{ c3} \text{ c4} + \frac{1}{2} \text$ $\frac{1}{2}$ a c2 d1 D1 $e^{-it} - \frac{1}{2}$ a c1 D1 d2 $e^{-it} + \frac{1}{2}$ i a c2 D1 d2 $e^{-it} - \frac{1}{2}$ a c1 d1 D2 $e^{-it} + \frac{1}{2}$ $\frac{1}{4}$ a c1 C1 c2 $e^{it} - \frac{3}{8}$ i a C1 c2² $e^{it} + \frac{3}{8}$ a c1² C2 $e^{it} + \frac{1}{4}$ i a c1 c2 C2 $e^{it} + \frac{1}{8}$ a c2² C2 $e^{it} + \frac{1}{8}$ $\frac{1}{2}$ i a c1 d1 D1 $e^{it} + \frac{1}{4}$ a c2 d1 D1 $e^{it} + \frac{1}{4}$ a c1 D1 d2 $e^{it} + \frac{3}{4}$ i a c2 D1 d2 $e^{it} - \frac{3}{4}$ a c1 d1 D2 $e^{it} - \frac{3}{4}$ $\frac{1}{4} \pm a \, c2 \, d1 \, D2 \, e^{i \, t} - \frac{1}{4} \pm a \, c1 \, d2 \, D2 \, e^{i \, t} - \frac{1}{4} \, a \, c2 \, d2 \, D2 \, e^{i \, t} - \frac{1}{2} \pm C1 \, d1^2 \, G - \frac{3}{2} \, C2 \, d1^2 \, G + \frac{1}{2} \, d1^2 \, G +$ $\frac{1}{4} \text{ C1 d1 d2 G} + \frac{1}{4} \text{ i C2 d1 d2 G} - \frac{3}{2} \text{ i C1 d2}^2 \text{ G} - \frac{1}{2} \text{ C2 d2}^2 \text{ G} + \frac{1}{4} \text{ i C1 d1}^2 \text{ e}^{-\text{i t}} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\text{i t}} \text{ G} + \frac{1}{4} \text{ C2 d1}^2 \text{ e}^{-\text{i t}} \text{ G} + \frac{1}{4} \text{ C2 d2}^2 \text{ G} + \frac{1}{4}$ $\frac{1}{2} \text{ C1 d1 d2 } e^{-i \, t} \, \text{G} - \frac{1}{2} \, \text{i} \, \text{C2 d1 d2 } e^{-i \, t} \, \text{G} - \frac{1}{4} \, \text{i} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{4} \, \text{C2 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{i} \, \text{C1 d1}^2 \, e^{i \, t} \, \text{G} + \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{C2 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{G} - \frac{1}{8} \, \text{C1 d2}^2 \, e^{-i \, t} \, \text{C2 d2}^2 \, e^{-i \, t} \, \text{C2 d2}^2 \, e^{-i \, t} \, \text{C3 d2}^2 \, e^{-i \, t} \, \text{C4 d2}^2 \, e^{-i \,$ $\frac{3}{9} \text{ C2 d1}^2 \text{ e}^{\text{i t}} \text{ G} - \frac{1}{4} \text{ C1 d1 d2 e}^{\text{i t}} \text{ G} + \frac{1}{4} \text{ i C2 d1 d2 e}^{\text{i t}} \text{ G} - \frac{3}{9} \text{ i C1 d2}^2 \text{ e}^{\text{i t}} \text{ G} + \frac{1}{9} \text{ C2 d2}^2 \text{ e}$ i a c2 d1 D1 + i a c1 D1 d2 - a c2 D1 d2 - i a c1 d1 D2 + a c2 d1 D2 + a c1 d2 D2 + i a c2 d2 D2 - $\frac{1}{2} \text{ C1 d1}^2 \text{ G} + \frac{1}{2} \text{ i C2 d1}^2 \text{ G} - \text{ i C1 d1 d2 G} - \text{ C2 d1 d2 G} + \frac{1}{2} \text{ C1 d2}^2 \text{ G} - \frac{1}{2} \text{ i C2 d2}^2 \text{ G}$

 $\ln[\cdot] := -\frac{1}{2} \text{ a c1}^2 \text{ C1} - \text{i a c1 C1 c2} + \frac{1}{2} \text{ a C1 c2}^2 + \frac{1}{2} \text{ i a c1}^2 \text{ C2} - \text{a c1 c2 C2} - \frac{1}{2} \text{ i a c2}^2 \text{ C2} + \frac{1}{2} \text{ c2}^2 \text{ c2}^2 + \frac{1}{2} \text{ c2}^2 \text{ c2}^2 + \frac{1}{2} \text{ c$ a c1 d1 D1 + i a c2 d1 D1 + i a c1 D1 d2 - a c2 D1 d2 - i a c1 d1 D2 + a c2 d1 D2 + a c1 d2 D2 + $\dot{\mathbf{n}}$ a c2 d2 D2 - $\frac{1}{2}$ C1 d1² G + $\frac{1}{2}$ $\dot{\mathbf{n}}$ C2 d1² G - $\dot{\mathbf{n}}$ C1 d1 d2 G - C2 d1 d2 G + $\frac{1}{2}$ C1 d2² G - $\frac{1}{2}$ $\dot{\mathbf{n}}$ C2 d2² G $Out[*] = -\frac{1}{2} \text{ a c1}^2 \text{ C1} - \text{ii a c1 C1 c2} + \frac{1}{2} \text{ a C1 c2}^2 + \frac{1}{2} \text{ ii a c1}^2 \text{ C2} - \text{a c1 c2 C2} - \frac{1}{2} \text{ ii a c2}^2 \text{ C2} + \frac{1}{2} \text{ c2} \text{ C2} + \frac{1}{2} \text{ c3} \text{ C2}^2 \text{ C2} + \frac{1}{2} \text{ c4} \text{ C2}^2 \text{ C2} + \frac{1}{2} \text{ C2}^2 \text{ C2}^2 + \frac{1}{2} \text{ C2}^2 \text{ C2}^2 + \frac{1}{2} \text{ C2}^2 + \frac{1}{$ a c1 d1 D1 + i a c2 d1 D1 + i a c1 D1 d2 - a c2 D1 d2 - i a c1 d1 D2 + a c2 d1 D2 + a c1 d2 D2 + i a c2 d2 D2 - $\frac{1}{2}$ C1 d1² G + $\frac{1}{2}$ i C2 d1² G - i C1 d1 d2 G - C2 d1 d2 G + $\frac{1}{2}$ C1 d2² G - $\frac{1}{2}$ i C2 d2² G

$$\begin{split} m_{\ell^{+}} &= -\frac{1}{2} \text{ a } \text{ c1}^2 \text{ C1} - \text{ i a } \text{ c1 } \text{ C1 } \text{ c2} + \frac{1}{2} \text{ a } \text{ C1 } \text{ c2}^2 + \frac{1}{2} \text{ i a } \text{ c1}^2 \text{ C2} - \text{ a } \text{ c1 } \text{ c2 } \text{ C2} - \text{ a } \\ &= \frac{1}{2} \text{ ii a } \text{ c2}^2 \text{ C2} + \text{ a } \text{ c1 } \text{ d1 } \text{ D1} + \text{ ii a } \text{ c2 } \text{ d1 } \text{ D1} + \text{ ii a } \text{ c2 } \text{ D1 } \text{ d2} - \text{ a } \text{ c2 } \text{ D1 } \text{ d2} - \text{ ii a } \text{ c1 } \text{ d1 } \text{ D2} + \text{ a } \text{ c2 } \text{ d2 } \text{ D2} + \text{ ii a } \text{ c2 } \text{ d2 } \text{ D2} - \frac{1}{2} \text{ C1 } \text{ d1}^2 \text{ G} + \frac{1}{2} \text{ ii C2 } \text{ d1}^2 \text{ G} - \text{ ii C1 } \text{ d2} \text{ G} - \text{ ii C1 } \text{ d2} \text{ G} - \text{ ii C2 } \text{ d2}^2 \text{ G} / \text{ (c1 } \rightarrow \text{ 1, C1 } \rightarrow \text{ 1, c2 } \rightarrow \text{ -I, C2 } \rightarrow \text{ I})} \\ \text{Cod}(\pi) &= -4 \text{ a } + 2 \text{ a } \text{ d1 } \text{ D1} + 2 \text{ i a } \text{ D1 } \text{ d2} - 2 \text{ i a } \text{ d1 } \text{ D2} + 2 \text{ a } \text{ d2 } \text{ D2} - \text{ d1}^2 \text{ G} - 2 \text{ i } \text{ d1 } \text{ d2} \text{ G} + \text{ d2}^2 \text{ G}} \\ m_{\ell}(\pi) &= -\frac{1}{8} \text{ e}^{\frac{12}{2}} \\ &= -\frac{1}{8$$

$$\begin{array}{l} \frac{1}{8}e^{\frac{i\,t}{2}} \\ & \left(-e^{-2\,i\,t}\left(a\left(d1-i\,d2\right)\,\left(2\,C1\,c2-2\,i\,c2\,C2+2\,c1\,\left(i\,C1+C2\right)-i\,d1\,D1-D1\,d2-d1\,D2+i\,d2\,D2\right)-i\,d\left(c1-i\,c2\right)^2\,\left(D1-i\,D2\right)\,g\right)-e^{2\,i\,t} \\ & \left(a\left(d1+i\,d2\right)\,\left(2\,C1\,c2+2\,c1\,\left(-i\,C1+C2\right)+i\,\left(2\,c2\,C2+d1\,D1+i\,D1\,d2+i\,d1\,D2-d2\,D2\right)\right)+i\,d\left(c1+i\,c2\right)^2\,\left(D1+i\,D2\right)\,g\right)+i\,d\left(c1+i\,c2\right)^2\,\left(D1+i\,D2\right)\,g\right)+i\,d\left(c1+i\,c2\right)^2\,\left(D1+i\,D2\right)\,g\right)+i\,d\left(c1+i\,c2\right)^2\,\left(D1+i\,D2\right)\,g\right)+i\,d\left(c1+i\,c2\right)^2\,\left(D1+i\,D2\right)\,g\right)+i\,d\left(c1+i\,c2\right)^2\,\left(c1+i\,c2\right)^2\,\left(c2+d1\,D1\,d2+2\,i\,D1\,d2^2+2\,C1\,\left(c2\,d1+c1\,d2+2\,i\,c2\,d2\right)+d1^2\,D2+d2^2\,D2\right)+\left(c1+i\,c2\right)^2\,\left(-2\,c2\,D1+c1\,D2-i\,c2\,D2\right)\,g\right)-2\,d\left(a\left(d1+i\,d2\right)\,\left(-2\,c1\,C2\,d1-2\,c2\,C2\,d2-2\,d1\,D1\,d2+2\,i\,D1\,d2^2+2\,C1\,\left(c2\,d1+c1\,d2-2\,i\,c2\,d2\right)+d1^2\,D2+d2^2\,D2\right)+\left(c1-i\,c2\right)^2\,\left(-2\,c2\,D1+c1\,D2+i\,c2\,D2\right)\,g\right)-4\,d\left(a\left(d1+i\,d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,i\,c1\,C2-2\,c2\,C2+d1\,D1+i\,D1\,d2-i\,d1\,D2+d2\,D2\right)+\left(c1+i\,c2\right)^2\,\left(D1-i\,D2\right)\,g\right)\,t\right)\,Cos\left[\frac{t}{2}\right]+e^{\frac{i\,t}{2}}\,C\left[2\right]\,Cos\left[\frac{t}{2}\right]+\\ \frac{1}{8}\,e^{\frac{i\,t}{2}}\,\left(2\,e^{-i\,t}\,\left(a\left(-2\,c1\,C1\,d1+2\,c2\,C2\,d1+d1^2\,D1-2\,C1\,c2\,d2+D1\,d2^2+2\,c1\,C2\,\left(2\,i\,d1+d2\right)-2\,c1\,d1^2\,D2-2\,d1\,d2\,D2\right)+\left(c1-i\,c2\right)^2\,\left(i\,c2\,D1+c1\,\left(D1-2\,i\,D2\right)\right)\,g\right)+\\ 2\,e^{i\,t}\,\left(-a\left(2\,c2\,C2\,d1+d1^2\,D1-2\,C1\,c2\,d2+D1\,d2^2-2\,c1\,\left(C1\,d1+2\,i\,C2\,d2\right)+2\,c1\,d1^2\,D2-2\,d1\,d2\,D2\right)-\left(c1+i\,c2\right)^2\,\left(D1-i\,D2\right)\,g\right)+\\ e^{2\,i\,t}\,\left(a\left(d1+i\,d2\right)\,\left(-2\,i\,C1\,c2+2\,c1\,\left(C1-i\,c2\right)-2\,c2\,C2-d1\,D1+i\,D1\,d2-i\,d1\,D2+d2\,D2\right)-\left(c1+i\,c2\right)^2\,\left(D1-i\,D2\right)\,g\right)+4\\ \left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,c1\,\left(C1+i\,C2\right)-2\,c2\,C2-d1\,D1+i\,D1\,d2-i\,d1\,D2+d2\,D2\right)-i\,(c1+i\,c2)^2\,\left(D1+i\,D2\right)\,g\right)+3\,d\left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,c1\,\left(C1+i\,c2\right)-2\,c2\,C2-d1\,D1+i\,D1\,d2-i\,d1\,D2+d2\,D2\right)-i\,(c1+i\,c2)^2\,\left(D1-i\,D2\right)\,g\right)+3\,d\left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,c1\,C1\,c2+2\,c2\,C2\,d1\,D1+i\,D1\,d2-i\,d1\,D2-i\,d1\,D2+d2\,D2\right)-i\,(c1+i\,c2)^2\,\left(D1-i\,D2\right)\,g\right)+3\,d\left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,c1\,C1\,C2+2\,c2\,C2\,d1\,D1+i\,D1\,d2-i\,d1\,D2-i\,d1\,D2+d2\,D2\right)-i\,(c1+i\,c2)^2\,\left(D1-i\,D2\right)\,g\right)+3\,d\left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,i\,C1\,c2+2\,c1\,C1\,C2+2\,c2\,C2\,d1\,D1+i\,D1\,d2-i\,d1\,D2-i\,d1\,D2+d2\,D2\right)-i\,(c1+i\,c2)^2\,\left(D1-i\,D2\right)\,g\right)+3\,d\left(a\left(-i\,d1+d2\right)\,\left(-2\,c1\,C1-2\,c1\,C1-2\,c2\,C1\,C1-2\,c2\,C2\,$$

Info]:= TrigReduce[%420]

Out[*]= $\frac{1}{4}$ i a c1 C1 d1 $-\frac{1}{4}$ a C1 c2 d1 $+\frac{3}{4}$ a c1 C2 d1 $-\frac{1}{4}$ i a c2 C2 d1 $-\frac{1}{8}$ i a d1² D1 $-\frac{1}{4}$ a c1 C1 d2 $+\frac{1}{4}$ $\frac{3}{4}$ i a C1 c2 d2 - $\frac{1}{4}$ i a c1 C2 d2 + $\frac{1}{4}$ a c2 C2 d2 + $\frac{1}{4}$ a d1 D1 d2 - $\frac{3}{9}$ i a D1 d2² - $\frac{3}{9}$ a d1² D2 + $\frac{1}{4}$ i a d1 d2 D2 - $\frac{1}{8}$ a d2² D2 - $\frac{1}{2}$ i a c1 C1 d1 e^{-it} - $\frac{1}{2}$ a C1 c2 d1 e^{-it} - $\frac{1}{2}$ a c1 C2 d1 e^{-it} + $\frac{1}{2} \pm a \, c2 \, C2 \, d1 \, e^{-i \, t} + \frac{1}{4} \pm a \, d1^2 \, D1 \, e^{-i \, t} - \frac{1}{2} \, a \, c1 \, C1 \, d2 \, e^{-i \, t} + \frac{1}{2} \pm a \, C1 \, c2 \, d2 \, e^$ $\frac{1}{2} \, \, \dot{\text{a}} \, \, \text{ac1 C2 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ac2 C2 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad1 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, - \, \frac{1}{4} \, \, \dot{\text{a}} \, \, \text{aD1 d2}^2 \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad1 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \dot{\text{ad2 D1 d2}} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2} \, \, \text{e}^{-\text{i} \, \, \text{t}} \, + \, \frac{1}{2} \, \, \text{ad2 D1 d2$ $\frac{1}{4}$ a d1² D2 $e^{-it} - \frac{1}{2}$ i a d1 d2 D2 $e^{-it} - \frac{1}{4}$ a d2² D2 $e^{-it} + \frac{1}{4}$ i a c1 C1 d1 $e^{it} + \frac{1}{4}$ $\frac{1}{4} \text{ a C1 c2 d1 } e^{i \ t} - \frac{3}{4} \text{ a c1 C2 d1 } e^{i \ t} - \frac{1}{4} \text{ i a c2 C2 d1 } e^{i \ t} - \frac{1}{8} \text{ i a d1}^2 \text{ D1 } e^{i \ t} + \frac{1}{4} \text{ a c1 C1 d2 } e^{i \ t} + \frac{1}{4} \text{ a c2 C2 d2 } e^{i \ t} + \frac{1}{8} \text{ a c2 C2 d2$ $\frac{3}{4} \pm a \text{ C1 c2 d2 } e^{\pm t} - \frac{1}{4} \pm a \text{ c1 C2 d2 } e^{\pm t} - \frac{1}{4} \text{ a c2 C2 d2 } e^{\pm t} - \frac{1}{4} \text{ a d1 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d2 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d3 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d2 } e^{\pm t} - \frac{1}{4} \text{ a d4 D1 d4 } e^{\pm t} -$ $\frac{3}{9}$ i a D1 d2² e^{it} + $\frac{3}{9}$ a d1² D2 e^{it} + $\frac{1}{4}$ i a d1 d2 D2 e^{it} + $\frac{1}{9}$ a d2² D2 e^{it} - $\frac{1}{9}$ i c1² D1 g + $\frac{1}{2} \text{ c1 c2 D1 g} - \frac{3}{2} \text{ i c2}^2 \text{ D1 g} - \frac{3}{2} \text{ c1}^2 \text{ D2 g} + \frac{1}{4} \text{ i c1 c2 D2 g} - \frac{1}{2} \text{ c2}^2 \text{ D2 g} + \frac{1}{4} \text{ i c1}^2 \text{ D1 } \text{ e}^{-\text{i t}} \text{ g} + \frac{1}{2} \text{ c1} \text{ c2} \text{ D2 g} + \frac{1}{2} \text{ C2 g} + \frac{1}{2} \text{ C2 g} + \frac{1}{2} \text{ D2 g} + \frac{1}{2} \text{ C2 g} + \frac{1}{$ $\frac{1}{2}$ c1 c2 D1 e^{-it} g $-\frac{1}{4}$ i c2² D1 e^{-it} g $+\frac{1}{4}$ c1² D2 e^{-it} g $-\frac{1}{2}$ i c1 c2 D2 e^{-it} g $-\frac{1}{2}$ $\frac{1}{4} \, \text{c2}^2 \, \text{D2} \, \text{e}^{-\text{i} \, \text{t}} \, \text{g} \, - \, \frac{1}{2} \, \text{i} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, - \, \frac{1}{4} \, \text{c1} \, \text{c2} \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, - \, \frac{3}{2} \, \text{i} \, \text{c2}^2 \, \text{D1} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, \text{g} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, \text{e}^{\text{i} \, \text{t}} \, + \, \frac{3}{2} \, \text{c1}^2 \, \text{D2} \, + \, \frac{3}{2} \, \text{c1}^2 \, + \, \frac{3}{2} \, + \, \frac{$ $\frac{1}{4}$ i c1 c2 D2 e^{i t} g + $\frac{1}{2}$ c2² D2 e^{i t} g + a c1 C1 d1 e^{i t} t + i a C1 c2 d1 e^{i t} t - i a c1 C2 d1 e^{i t} t + a c2 C2 d1 $e^{it}t - \frac{1}{2}$ a d1² D1 $e^{it}t + i$ a c1 C1 d2 $e^{it}t - a$ C1 c2 d2 $e^{it}t + a$ c1 C2 d2 $e^{it}t + a$ $\verb"i a c2 C2 d2 e" t - i a d1 D1 d2 e" t + \frac{1}{2} a D1 d2^2 e" t + \frac{1}{2} i a d1^2 D2 e" t - a d1 d2 D2 e" t - a d1$ $\frac{1}{2} \pm a \, d2^2 \, D2 \, e^{i \, t} \, t \, - \, \frac{1}{2} \, c1^2 \, D1 \, e^{i \, t} \, g \, t \, - \, \pm c1 \, c2 \, D1 \, e^{i \, t} \, g \, t \, + \, \frac{1}{2} \, c2^2 \, D1 \, e^{i \, t} \, g \, t \, + \, \frac{1}{2} \, \pm c1^2 \, D2 \, e^{i \, t} \, g \, t \, - \, \frac{1}{2} \, c1^2 \, D2 \, e^{i \, t} \, g \, t \, + \, \frac{1}{2} \, e^{i \, t} \, g \, t \, + \, \frac{1$ $c1 c2 D2 e^{it} g t - \frac{1}{2} i c2^{2} D2 e^{it} g t + \frac{1}{2} i C[1] - \frac{1}{2} i e^{it} C[1] + \frac{C[2]}{2} + \frac{1}{2} e^{it} C[2]$

 $l_{n/(*)} = p33 \text{ temp} := \frac{1}{4} \pm a \text{ c1 C1 d1} - \frac{1}{4} a \text{ C1 c2 d1} + \frac{3}{4} a \text{ c1 C2 d1} - \frac{1}{4} \pm a \text{ c2 C2 d1} - \frac{1}{8} \pm a \text{ d1}^2 \text{ D1} - \frac{1}{8} \pm a \text{ d1}^2 \text{ D1}$ $\frac{1}{4}$ a c1 C1 d2 + $\frac{3}{4}$ \pm a C1 c2 d2 - $\frac{1}{4}$ \pm a c1 C2 d2 + $\frac{1}{4}$ a c2 C2 d2 + $\frac{1}{4}$ a d1 D1 d2 - $\frac{3}{2}$ \pm a D1 d2² - $\frac{3}{2}$ a d1² D2 + $\frac{1}{4}$ <u>i</u> a d1 d2 D2 - $\frac{1}{2}$ a d2² D2 - $\frac{1}{2}$ <u>i</u> a c1 C1 d1 e^{-it} - $\frac{1}{2}$ a C1 c2 d1 e^{-it} - $\frac{1}{2}$ a c1 C2 d1 e^{-it} + $\frac{1}{2}$ i a c2 C2 d1 e^{-it} + $\frac{1}{4}$ i a d1² D1 e^{-it} - $\frac{1}{2}$ a c1 C1 d2 e^{-it} + $\frac{1}{2}$ i a C1 c2 d2 $e^{-it} + \frac{1}{2}$ i a c1 C2 d2 $e^{-it} + \frac{1}{2}$ a c2 C2 d2 $e^{-it} + \frac{1}{2}$ a d1 D1 d2 $e^{-it} - \frac{1}{2}$ $\frac{1}{4}$ i a D1 d2² e^{-it} + $\frac{1}{4}$ a d1² D2 e^{-it} - $\frac{1}{2}$ i a d1 d2 D2 e^{-it} - $\frac{1}{4}$ a d2² D2 e^{-it} + $\frac{1}{4}$ i a c1 C1 d1 e^{it} + $\frac{1}{4} \text{ a C1 c2 d1 } e^{it} - \frac{3}{4} \text{ a c1 C2 d1 } e^{it} - \frac{1}{4} \text{ i a c2 C2 d1 } e^{it} - \frac{1}{2} \text{ i a d1}^2 \text{ D1 } e^{it} + \frac{1}{4} \text{ a c1 C1 d2 }$ $\frac{3}{4}$ i a C1 c2 d2 e^{it} - $\frac{1}{4}$ i a c1 C2 d2 e^{it} - $\frac{1}{4}$ a c2 C2 d2 e^{it} - $\frac{1}{4}$ a d1 D1 d2 e^{it} - $\frac{3}{8}$ i a D1 d2² e^{it} + $\frac{3}{2} \text{ a d1}^2 \text{ D2 } \text{ e}^{\text{i} \text{ t}} + \frac{1}{2} \text{ i a d1 d2 D2 } \text{ e}^{\text{i} \text{ t}} + \frac{1}{2} \text{ a d2}^2 \text{ D2 } \text{ e}^{\text{i} \text{ t}} - \frac{1}{2} \text{ i c1}^2 \text{ D1 g} + \frac{1}{2} \text{ c1 c2 D1 g} - \frac{1}{2} \text{ c1 c2 D1 g} + \frac{1}{2} \text{ c2 D1$ $\frac{3}{9} \pm c2^{2} D1 g - \frac{3}{9} c1^{2} D2 g + \frac{1}{4} \pm c1 c2 D2 g - \frac{1}{9} c2^{2} D2 g + \frac{1}{4} \pm c1^{2} D1 e^{-i t} g + \frac{1}{2} c1 c2 D1 e^{-i t} g - \frac{1}{2} c1 c2 D1 e^{-i t} g -$ $\frac{1}{4} \pm c2^2 D1 e^{-it} g + \frac{1}{4} c1^2 D2 e^{-it} g - \frac{1}{4} \pm c1 c2 D2 e^{-it} g - \frac{1}{4} c2^2 D2 e^{-it} g - \frac{1}{4} \pm c1^2 D1 e^{it} g - \frac{1}{4} c2^2 D2 e^{-it} g - \frac{1}{4} c2^2 D2 e^{-it$ a c1 C1 d1 e^{it} t + i a C1 c2 d1 e^{it} t - i a c1 C2 d1 e^{it} t + a c2 C2 d1 e^{it} t - i a d1² D1 e^{it} t + i a c1 C1 d2 e^{i t} t - a C1 c2 d2 e^{i t} t + a c1 C2 d2 e^{i t} t + i a c2 C2 d2 e^{i t} t - i a d1 D1 d2 e^{i t} t + $\frac{1}{2} \text{ a D1 d2}^2 \, \text{e}^{\text{i}\,\text{t}} \, \text{t} + \frac{1}{2} \, \text{i} \, \text{a d1}^2 \, \text{D2} \, \text{e}^{\text{i}\,\text{t}} \, \text{t} - \text{a d1 d2 D2} \, \text{e}^{\text{i}\,\text{t}} \, \text{t} - \frac{1}{2} \, \text{i} \, \text{a d2}^2 \, \text{D2} \, \text{e}^{\text{i}\,\text{t}} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{t} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{c1} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{g} \, \text{c1} - \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{e}^{\text{i}\,\text{t}} \, \text{c1} + \frac{1}{2} \, \text{c1}^2 \, \text{D1} \, \text{c1}^2 \, \text{D1}^2 \, \text{c1}^2 \, \text{D1} \, \text{c1}^2 \, \text{D1} \, \text{c1}^2 \, \text{D1}$ i c1 c2 D1 e^{it} g t + $\frac{1}{2}$ c2² D1 e^{it} g t + $\frac{1}{2}$ i c1² D2 e^{it} g t - c1 c2 D2 e^{it} g t - $\frac{1}{2}$ i c2² D2 e^{it} g t

Inf@]:= Collect[p33temp, t * Exp[I * t]]

 $\frac{3}{4}$ i a C1 c2 d2 - $\frac{1}{4}$ i a c1 C2 d2 + $\frac{1}{4}$ a c2 C2 d2 + $\frac{1}{4}$ a d1 D1 d2 - $\frac{3}{9}$ i a D1 d2² - $\frac{3}{9}$ a d1² D2 + $\frac{1}{4}$ i a d1 d2 D2 - $\frac{1}{8}$ a d2² D2 - $\frac{1}{2}$ i a c1 C1 d1 e^{-it} - $\frac{1}{2}$ a C1 c2 d1 e^{-it} - $\frac{1}{2}$ a c1 C2 d1 e^{-it} + $\frac{1}{2} \pm a \, c2 \, C2 \, d1 \, e^{-i \, t} + \frac{1}{4} \pm a \, d1^2 \, D1 \, e^{-i \, t} - \frac{1}{2} \, a \, c1 \, C1 \, d2 \, e^{-i \, t} + \frac{1}{2} \pm a \, C1 \, c2 \, d2 \, e^$ $\frac{1}{2} \; \verb"i" \; a \; \verb"c1 C2 d2" \; e^{-i \; t} \; + \; \frac{1}{2} \; \verb"a c2 C2 d2" \; e^{-i \; t} \; + \; \frac{1}{2} \; \verb"a d1 D1 d2" \; e^{-i \; t} \; - \; \frac{1}{4} \; \verb"i" \; \verb"a D1 d2" \; e^{-i \; t} \; + \; \frac{1}{2} \; \verb"a d2 d2" \; e^{-i \; t} \; + \; \frac{1}{2} \; \verb"a d3 d3" \; e^{-i \; t} \; + \; \frac{1}{2} \; e^{-i \; t} \; +$ $\frac{3}{4} \text{ a c1 C2 d1 } \text{ e}^{\text{i t}} - \frac{1}{4} \text{ i a c2 C2 d1 } \text{ e}^{\text{i t}} - \frac{1}{8} \text{ i a d1}^{\text{2}} \text{ D1 } \text{ e}^{\text{i t}} + \frac{1}{4} \text{ a c1 C1 d2 } \text{ e}^{\text{i t}} + \frac{3}{4} \text{ i a C1 c2 d2 } \text{ e}^{\text{i t}} - \frac{1}{8} \text{ e}^{\text{i t}} + \frac{1}{4} \text{ a c1 C1 d2 } \text{ e}^{\text{i t}} + \frac{3}{4} \text{ i a C1 c2 d2 } \text{ e}^{\text{i t}} - \frac{1}{8} \text{ e}^{\text{i t}} + \frac{1}{4} \text{ a c1 C1 d2 } \text{ e}^{\text{i t}} + \frac{3}{4} \text{ e}^{\text{i t}} + \frac{$ $\frac{1}{4} \pm a \text{ c1 C2 d2 } e^{i \pm} - \frac{1}{4} a \text{ c2 C2 d2 } e^{i \pm} - \frac{1}{4} a \text{ d1 D1 d2 } e^{i \pm} - \frac{3}{2} \pm a \text{ D1 d2}^2 e^{i \pm} + \frac{3}{2} a \text{ d1}^2 \text{ D2 } e^{i \pm} + \frac{3}{2} a \text{ d2}^2$ $\frac{1}{4}\,\,\dot{\text{1}}\,\,a\,\,d1\,\,d2\,\,D2\,\,e^{\,\dot{\text{1}}\,\,t}\,+\,\frac{1}{8}\,\,a\,\,d2^{\,2}\,\,D2\,\,e^{\,\dot{\text{1}}\,\,t}\,-\,\frac{1}{8}\,\,\dot{\text{1}}\,\,c1^{\,2}\,\,D1\,\,g\,+\,\frac{1}{4}\,\,c1\,\,c2\,\,D1\,\,g\,-\,\frac{3}{8}\,\,\dot{\text{1}}\,\,c2^{\,2}\,\,D1\,\,g\,-\,\frac{3}{8}\,\,\dot{\text{1}}\,\,d2^{\,2}\,\,D1\,\,g\,-\,\frac{3}{8}\,\,\dot{\text{1}}\,\,d2^{\,2}\,\,D1\,\,g\,-\,\frac{3}{8}\,\,\dot{\text{1}}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,2}\,\,d2^{\,$ $\frac{3}{9}$ c1² D2 g + $\frac{1}{4}$ i c1 c2 D2 g - $\frac{1}{9}$ c2² D2 g + $\frac{1}{4}$ i c1² D1 e^{-it} g + $\frac{1}{2}$ c1 c2 D1 e^{-it} g - $\frac{1}{4} \pm c2^{2} D1 e^{-i t} g + \frac{1}{4} c1^{2} D2 e^{-i t} g - \frac{1}{2} \pm c1 c2 D2 e^{-i t} g - \frac{1}{4} c2^{2} D2 e^{-i t} g - \frac{1}{8} \pm c1^{2} D1 e^{i t} g - \frac{1}{8} + \frac{1}{8} c2^{2} D2 e^{-i t} g - \frac{1}{8} + \frac{1}{8} c2^{2} D1 e^{-i t} g \frac{1}{4} \text{ c1 c2 D1 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} - \frac{3}{2} \text{ i c2}^{\text{ }} \text{ D1 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{3}{2} \text{ c1}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{4} \text{ i c1 c2 D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ g} + \frac{1}{2} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ c2}^{\text{ }} \text{ C2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ c2}^{\text{ }} \text{ c2}^{\text{ }} \text{ D2 } \mathbb{e}^{\text{ i} \text{ t}} \text{ c2}^{\text{ }} \text{ c2}^{\text{ c2}} \text{ c2}^{\text{ }} \text{ c2}^{\text{ c2}} \text{ c2}^{\text{ c2}} \text{ c2}^{\text{ }} \text{ c2}^{\text{ c2}} \text{$ e^{it} (a c1 C1 d1 + i a C1 c2 d1 - i a c1 C2 d1 + a c2 C2 d1 - $\frac{1}{2}$ a d1² D1 + i a c1 C1 d2 - a C1 c2 d2 + a c1 C2 d2 + i a c2 C2 d2 - i a d1 D1 d2 + $\frac{1}{2}$ a D1 d2² + $\frac{1}{2}$ i a d1² D2 - a d1 d2 D2 - $\frac{1}{2}$ i a d2² D2 - $\frac{1}{2} \text{ c1}^2 \text{ D1 g} - \text{i} \text{ c1 c2 D1 g} + \frac{1}{2} \text{ c2}^2 \text{ D1 g} + \frac{1}{2} \text{i} \text{ c1}^2 \text{ D2 g} - \text{c1 c2 D2 g} - \frac{1}{2} \text{i} \text{ c2}^2 \text{ D2 g} \right) \text{ t}$

 $\ln[*] = a c1 C1 d1 + i a C1 c2 d1 - i a c1 C2 d1 + a c2 C2 d1 - \frac{1}{2} a d1^2 D1 + i a c1 C1 d2 - a C1 c2 d2 + a c2 C2 d1 - a c2 C2 d1 - a C1 c2 d2 + a c2 C2 d1 - a C1 c2 d2 + a c2 C2 d1 - a c2 C2 C2$ a c1 C2 d2 + $\dot{\mathbf{n}}$ a c2 C2 d2 - $\dot{\mathbf{n}}$ a d1 D1 d2 + $\frac{1}{2}$ a D1 d2² + $\frac{1}{2}$ $\dot{\mathbf{n}}$ a d1² D2 - a d1 d2 D2 - $\frac{1}{2}$ $\dot{\mathbf{n}}$ a d2² D2 - $\frac{1}{2}$ c1² D1 g - $\dot{\mathbf{n}}$ c1 c2 D1 g + $\frac{1}{2}$ c2² D1 g + $\frac{1}{2}$ $\dot{\mathbf{n}}$ c1² D2 g - c1 c2 D2 g - $\frac{1}{2}$ $\dot{\mathbf{n}}$ c2² D2 g /. $\{d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I*c, D2 \rightarrow -I*k\}$

Out[•]= **0**

$$\begin{aligned} & \textit{Out}(*) = & -\frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c1}^2 \, \, \text{C1} + \text{a} \, \, \text{c1} \, \, \text{C1} \, \, \text{c2} + \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{C1} \, \, \text{c2}^2 - \frac{1}{2} \, \, \text{a} \, \, \text{c1}^2 \, \, \text{C2} - \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c1} \, \, \text{c2} \, \, \text{C2} + \\ & \frac{1}{2} \, \, \text{a} \, \, \text{c2}^2 \, \, \text{C2} + \frac{1}{8} \, \, \dot{\mathbb{I}} \, \, \, \text{a} \, \, \text{c1} \, \, \text{d1} \, \, \text{D1} - \frac{3}{8} \, \, \text{a} \, \, \text{c2} \, \, \text{d1} \, \, \text{D1} - \frac{3}{8} \, \, \text{a} \, \, \text{c1} \, \, \text{D1} \, \, \text{d2} - \frac{5}{8} \, \, \dot{\mathbb{I}} \, \, \text{a} \, \, \text{c2} \, \, \text{D1} \, \, \text{d2} + \\ & \left(1 + \frac{7 \, \dot{\mathbb{I}}}{8}\right) \, \text{a} \, \, \text{c1} \, \, \text{d1} \, \, \text{D2} - \left(\frac{5}{8} - \dot{\mathbb{I}}\right) \, \text{a} \, \, \text{c2} \, \, \text{d1} \, \, \text{D2} - \left(\frac{5}{8} - \dot{\mathbb{I}}\right) \, \text{a} \, \, \text{c1} \, \, \text{d2} \, \, \text{D2} - \left(1 + \frac{3 \, \dot{\mathbb{I}}}{8}\right) \, \text{a} \, \, \text{c2} \, \, \text{d2} \, \, \text{D2} - \\ & \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \, \text{C1} \, \, \, \text{d1}^2 \, \, \text{G} - \frac{1}{2} \, \, \text{C2} \, \, \text{d1}^2 \, \, \text{G} + \text{C1} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} - \dot{\mathbb{I}} \, \, \text{C2} \, \, \text{d1} \, \, \text{d2} \, \, \text{G} + \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \text{C1} \, \, \, \text{d2}^2 \, \, \text{G} + \\ & \frac{1}{2} \, \, \dot{\mathbb{I}} \, \, \, \text{C1} \, \, \, \text{d2}^2 \, \, \, \text{G} + \frac{1}{2} \, \, \, \text{C2} \, \, \, \text{d2}^2 \, \, \text{G} \end{aligned}$$

lor = 1: z23temp /. {c1 \rightarrow 1, C1 \rightarrow 1, c2 \rightarrow -I, C2 \rightarrow I}

$$\textit{Out}[*]= -4 \; \text{\^{1}} \; \; a + \frac{1}{2} \; \text{\^{1}} \; \; a \; d1 \; D1 - a \; D1 \; d2 \; + \; \left(2 + \frac{3 \; \text{\^{1}}}{2}\right) \; a \; d1 \; D2 \; - \; \left(1 - 2 \; \text{\^{1}}\right) \; \; a \; d2 \; D2 \; - \; \text{\^{1}} \; \; d1^2 \; G \; + \; 2 \; d1 \; d2 \; G \; + \; \text{\^{1}} \; \; d2^2 \; G \; + \; \text{\^{1}} \; d2^2 \; G$$

$$\begin{array}{l} \text{In} [=]:= \ \ \text{z23temp} \ - \ \left(- \ \frac{1}{2} \ \dot{\text{ii}} \ \text{a} \ \text{c1}^2 \ \text{C1} + \text{a} \ \text{c1} \ \text{C1} \ \text{c2} + \frac{1}{2} \ \dot{\text{ii}} \ \text{a} \ \text{C1} \ \text{c2}^2 - \frac{1}{2} \ \text{a} \ \text{c1}^2 \ \text{C2} - \dot{\text{ii}} \ \text{a} \ \text{c1} \ \text{c2} \ \text{C2} + \frac{1}{2} \ \text{a} \ \text{c2}^2 \ \text{C2} + \frac{1}{2} \ \text{c2} \ \text{d2}^2 \ \text{C2} + \frac{1}{2} \ \text{c2} \ \text{d2}^2 \ \text{C2} + \frac{1}{2} \ \text{c2} \ \text{d2}^2 \ \text{G} \\ \end{array}$$

$$Out[*] = -\frac{7}{8} \text{ is a c1 d1 D1} + \frac{5}{8} \text{ a c2 d1 D1} + \frac{5}{8} \text{ a c1 D1 d2} + \frac{3}{8} \text{ is a c2 D1 d2} + \frac{7}{8} \text{ is a c1 d1 D2} - \frac{5}{8} \text{ a c2 d1 D2} - \frac{5}{8} \text{ a c1 d2 D2} - \frac{3}{8} \text{ is a c2 d2 D2}$$

$$Out[\cdot]_{=}$$
 -4 $\dot{\mathbb{1}}$ a + 2 $\dot{\mathbb{1}}$ a d1 D1 - 2 a D1 d2 + 2 a d1 D2 + 2 $\dot{\mathbb{1}}$ a d2 D2 - $\dot{\mathbb{1}}$ d1² G + 2 d1 d2 G + $\dot{\mathbb{1}}$ d2² G

In[*]:= ClearAll[z23temp]

In[*]:= **z33temp**

$$\begin{array}{l} \cos(e) = -\frac{1}{4} \ a \ \text{C1 C1 d1} - \frac{1}{4} \ \text{i} \ a \ \text{C1 C2 d1} + \frac{3}{4} \ \text{i} \ a \ \text{C1 C2 d1} + \frac{1}{4} \ \text{a} \ \text{C2 C2 d1} + \frac{1}{8} \ \text{a} \ \text{d1}^2 \ \text{D1} - \frac{1}{4} \ \text{i} \ \text{a} \ \text{C1 C1 d2} - \frac{3}{4} \ \text{a} \ \text{C1 C2 d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{C1 C2 d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{C1 C2 d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{C1 C2 d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{d1} \ \text{D1 d2} + \frac{3}{8} \ \text{a} \ \text{D1 d2}^2 - \frac{3}{8} \ \text{i} \ \text{a} \ \text{d1}^2 \ \text{D2} - \frac{1}{4} \ \text{a} \ \text{d1} \ \text{C2 C2 d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{C1 C2 d1} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{i} \ \text{a} \ \text{C1 C2 d1} \ \text{e}^{\text{i} \ \text{t}} - \frac{1}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} - \frac{1}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} - \frac{1}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} - \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} - \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} - \frac{1}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{3}{4} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{2} \ \text{i} \ \text{a} \ \text{c1 C2 d2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1 d2 D2} \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4} \ \text{a} \ \text{D1 d2}^2 \ \text{e}^{\text{i} \ \text{t}} + \frac{1}{4}$$

ln[*]:= z33temp /. {c1 \rightarrow 1, C1 \rightarrow 1, c2 \rightarrow -I, C2 \rightarrow I, g \rightarrow 0, G \rightarrow 0}

$$\begin{aligned} & \text{Out}(*) = -\mathsf{a} \, \mathsf{d} 1 + \frac{1}{8} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 + \mathsf{i} \, \mathsf{a} \, \mathsf{d} 2 + \frac{1}{4} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{D} 1 \, \mathsf{d} 2 + \frac{3}{8} \, \mathsf{a} \, \mathsf{D} 1 \, \mathsf{d} 2^2 - \frac{3}{8} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 2 - \\ & \frac{1}{4} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{d} 2 \, \mathsf{D} 2 - \frac{1}{8} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 2^2 \, \mathsf{D} 2 - \mathsf{a} \, \mathsf{d} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \frac{1}{8} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \mathsf{i} \, \mathsf{a} \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{D} 1 \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \\ & \frac{3}{8} \, \mathsf{a} \, \mathsf{D} 1 \, \mathsf{d} 2^2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \frac{3}{8} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{d} 2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \frac{1}{8} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 2^2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \\ & \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{D} 1 \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D} 1 \, \mathsf{d} 2^2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{d} 2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \\ & \frac{1}{4} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 2^2 \, \mathsf{D} 2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + 4 \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} - \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} - 4 \, \mathsf{a} \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} + \mathsf{a} \, \mathsf{d} 1 \, \mathsf{D} 1 \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} + \\ & \frac{1}{4} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{d} 2^2 \, \mathsf{e}^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + 4 \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} - \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} + \mathsf{d} \, \mathsf{d} 1 \, \mathsf{d} 2 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{t} + \\ & \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{d} 1 \, \mathsf{d} 1 \, \mathsf{d} 1^2 \, \mathsf{D} 1 \, \mathsf{e}^{\mathsf{i} \, \mathsf{t}} \, \mathsf{d} 1 \, \mathsf{d} 1 \, \mathsf{d} 1^2 \, \mathsf{d} 1^$$

 $ln[*]= z33 \text{ temp1} := -a d1 + \frac{1}{8} a d1^2 D1 + i a d2 + \frac{1}{4} i a d1 D1 d2 + \frac{3}{8} a D1 d2^2 - \frac{3}{8} i a d1^2 D2 - \frac{3}$ $\frac{1}{4}$ a d1 d2 D2 - $\frac{1}{2}$ <u>i</u> a d2² D2 - a d1 e^{i t} - $\frac{1}{2}$ a d1² D1 e^{i t} - <u>i</u> a d2 e^{i t} + $\frac{1}{4}$ <u>i</u> a d1 D1 d2 e^{i t} - $\frac{3}{9}$ a D1 d2² e^{it} - $\frac{3}{9}$ i a d1² D2 e^{it} + $\frac{1}{4}$ a d1 d2 D2 e^{it} - $\frac{1}{9}$ ii a d2² D2 e^{it} - $\frac{1}{4}$ a d1² D1 e^{2 it} - $\frac{1}{2}$ i a d1 D1 d2 $e^{2it} + \frac{1}{4}$ a D1 d2² $e^{2it} - \frac{1}{4}$ i a d1² D2 $e^{2it} + \frac{1}{2}$ a d1 d2 D2 $e^{2it} + \frac{1}{2}$ $\frac{1}{4}$ i a d2² D2 e^{2 i t} + 4 i a d1 e^{i t} t - $\frac{1}{2}$ i a d1² D1 e^{i t} t - 4 a d2 e^{i t} t + a d1 D1 d2 e^{i t} t + $\frac{1}{2}$ in a D1 d2² e^{i t} t - $\frac{1}{2}$ a d1² D2 e^{i t} t - in a d1 d2 D2 e^{i t} t + $\frac{1}{2}$ a d2² D2 e^{i t} t

In[*]:= Collect[z33temp1, t*Exp[I*t]]

$$\begin{aligned} & \textit{Out}[*] = - \mathsf{a} \, d1 + \frac{1}{8} \, \mathsf{a} \, d1^2 \, \mathsf{D1} + \mathsf{i} \, \mathsf{a} \, d2 + \frac{1}{4} \, \mathsf{i} \, \mathsf{a} \, d1 \, \mathsf{D1} \, d2 + \frac{3}{8} \, \mathsf{a} \, \mathsf{D1} \, d2^2 - \frac{3}{8} \, \mathsf{i} \, \mathsf{a} \, d1^2 \, \mathsf{D2} - \frac{1}{8} \, \mathsf{i} \, \mathsf{a} \, d2^2 \, \mathsf{D2} - \mathsf{a} \, d1 \, e^{\mathsf{i} \, \mathsf{t}} - \frac{1}{8} \, \mathsf{a} \, d1^2 \, \mathsf{D1} \, e^{\mathsf{i} \, \mathsf{t}} - \mathsf{i} \, \mathsf{a} \, d2 \, e^{\mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, d1 \, \mathsf{D1} \, d2 \, e^{\mathsf{i} \, \mathsf{t}} - \frac{3}{8} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{i} \, \mathsf{t}} - \frac{3}{8} \, \mathsf{i} \, \mathsf{a} \, d1^2 \, \mathsf{D2} \, e^{\mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, d1 \, d2 \, \mathsf{D2} \, e^{\mathsf{i} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, d1^2 \, \mathsf{D1} \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, d1 \, \mathsf{D1} \, d2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, d1^2 \, \mathsf{D1} \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \frac{1}{2} \, \mathsf{i} \, \mathsf{a} \, d1 \, \mathsf{D1} \, d2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, \mathsf{D1} \, d2^2 \, e^{\mathsf{2} \, \mathsf{i} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D1} \, \mathsf{$$

 $ln[\cdot] := 4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$ $\textit{Out[*]} = 4 \; \texttt{i} \; \text{a} \; \text{d1} - \frac{1}{2} \; \texttt{i} \; \text{a} \; \text{d1}^2 \; \text{D1} - 4 \; \text{a} \; \text{d2} + \text{a} \; \text{d1} \; \text{D1} \; \text{d2} + \frac{1}{2} \; \texttt{i} \; \text{a} \; \text{D1} \; \text{d2}^2 - \frac{1}{2} \; \text{a} \; \text{d1}^2 \; \text{D2} - \texttt{i} \; \text{a} \; \text{d1} \; \text{d2} \; \text{D2} + \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2}$

Infol:= z3st

$$\textit{Out[*]} = \left(-\; \frac{1}{2} \; \text{i} \; \text{$d2$} \; \text{$e^{i\,t}$} \; \left(-\, 1 + \, \text{$e^{-i\,t}$} \right) \; + \; \frac{1}{2} \; \text{$d1$} \; \text{$e^{i\,t}$} \; \left(1 + \, \text{$e^{-i\,t}$} \right) \; \right) \; s \; + \; s^3 \; z \; 33 \; a^{-3} \; s^{-3} \; s^$$

$$\ln \left[e \right] := -\frac{1}{2} \, \dot{\mathbf{n}} \, d2 \, e^{\dot{\mathbf{n}} \, t} \, \left(-1 + e^{-\dot{\mathbf{n}} \, t} \right) \, + \, \frac{1}{2} \, d1 \, e^{\dot{\mathbf{n}} \, t} \, \left(1 + e^{-\dot{\mathbf{n}} \, t} \right)$$

$$\ln [=]:= \text{ Expand} \left[-\frac{1}{2} \, \dot{\mathbf{n}} \, \, \text{d2 e}^{\dot{\mathbf{n}} \, \, \mathbf{t}} \, \left(-\, \mathbf{1} \, + \, \mathbf{e}^{-\dot{\mathbf{n}} \, \, \mathbf{t}} \right) \, + \, \frac{1}{2} \, \, \text{d1 e}^{\dot{\mathbf{n}} \, \, \mathbf{t}} \, \left(\mathbf{1} \, + \, \mathbf{e}^{-\dot{\mathbf{n}} \, \, \mathbf{t}} \right) \, \right]$$

Out[*]=
$$\frac{d1}{2} - \frac{i d2}{2} + \frac{1}{2} d1 e^{i t} + \frac{1}{2} i d2 e^{i t}$$

In[*]:= **z23temp**

$$lo(s) = z23 temp /. \{c1 \rightarrow 1, C1 \rightarrow 1, c2 \rightarrow -I, C2 \rightarrow I, g \rightarrow 0, G \rightarrow 0\}$$

Out[*]= -4 i a + 2 i a d1 D1 - 2 a D1 d2 + 2 a d1 D2 + 2 i a d2 D2

$$\ln[s] = \text{Expand} \left[\frac{d1}{2} - \frac{\dot{n} d2}{2} + \frac{1}{2} d1 \left(1 + 2 \dot{n} r s^2 \right) + \frac{1}{2} \dot{n} d2 \left(1 + 2 \dot{n} r s^2 \right) \right]$$

Out
$$0 = d1 + i d1 r s^2 - d2 r s^2$$

In[*]:= z33temp1

$$\begin{aligned} & \textit{Out}(*) = - \mathsf{a} \, \mathsf{d}1 + \frac{1}{8} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}1 + \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}2 + \frac{1}{4} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{D}1 \, \mathsf{d}2 + \frac{3}{8} \, \mathsf{a} \, \mathsf{D}1 \, \mathsf{d}2^2 - \frac{3}{8} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}2 - \\ & \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 - \frac{1}{8} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}2^2 \, \mathsf{D}2 - \mathsf{a} \, \mathsf{d}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{8} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{D}1 \, \mathsf{d}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \\ & \frac{3}{8} \, \mathsf{a} \, \mathsf{D}1 \, \mathsf{d}2^2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{3}{8} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{8} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}2^2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{D}1 \, \mathsf{d}2^2 \, e^{2\,\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{4} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{2\,\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{D}1 \, \mathsf{d}2^2 \, e^{2\,\dot{\mathsf{u}} \, \mathsf{t}} - \frac{1}{4} \, \dot{\mathsf{u}} \, \mathsf{a} \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{d}2 \, \mathsf{D}2 \, e^{2\,\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \mathsf{a} \, \mathsf{d}1 \, \mathsf{D}1 \, \mathsf{d}2^2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{4} \, \dot{\mathsf{u}} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}2 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, e^{\dot{\mathsf{u}} \, \mathsf{t}} + \frac{1}{2} \, \mathsf{d}1 \, \mathsf{d}1^2 \, \mathsf{D}1 \, \mathsf{d}1^2 \, \mathsf{d}1^2 \, \mathsf{d}1^2 \, \mathsf{d}1^2 \, \mathsf{d}1^2 \, \mathsf{d}1^2 \, \mathsf{d}1$$

In[•]:= **z33temp**

$$\begin{aligned} \cos(q) &= -\frac{1}{4} \text{ a c1 C1 d1} - \frac{1}{4} \text{ i a C1 c2 d1} + \frac{3}{4} \text{ i a c1 C2 d1} + \frac{1}{4} \text{ a c2 C2 d1} + \frac{1}{8} \text{ a d1}^2 \text{ D1} - \frac{1}{4} \text{ i a c1 C1 d2} - \frac{3}{8} \text{ i a d1}^2 \text{ D2} - \frac{3}{8} \text{ i a d1}^2 \text{ D2} - \frac{3}{8} \text{ i a d1}^2 \text{ D2} - \frac{1}{4} \text{ i a c1 C2 d2} + \frac{1}{4} \text{ i a c2 C2 d2} + \frac{1}{4} \text{ i a d1 D1 d2} + \frac{3}{8} \text{ a D1 d2}^2 - \frac{3}{8} \text{ i a d1}^2 \text{ D2} - \frac{1}{4} \text{ a d1 d2 D2} - \frac{1}{8} \text{ i a d2}^2 \text{ D2} + \frac{1}{4} \text{ a c1 C1 d1 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ i a C1 c2 d1 e}^{\text{i} \text{ t}} + \frac{3}{4} \text{ i a c1 C2 d1 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a c2 C2 d1 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 D1 d2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a c1 C2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{2} \text{ i a c1 C1 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ i a d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ i a d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d2 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} - \frac{1}{4} \text{ a d1 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d2 d2 D2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d2 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i} \text{ t}} + \frac{1}{4} \text{ a d1 d2 d2 e}^{\text{i}$$

In[•]:= **z33temp1**

$$\begin{aligned} & \textit{Out} [*]_{=} \ - \text{a} \ \text{d1} + \frac{1}{8} \ \text{a} \ \text{d1}^2 \ \text{D1} + \text{i} \ \text{a} \ \text{d2} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{d1} \ \text{D1} \ \text{d2} + \frac{3}{8} \ \text{a} \ \text{D1} \ \text{d2}^2 - \frac{3}{8} \ \text{i} \ \text{a} \ \text{d1}^2 \ \text{D2} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d1}^2 \ \text{D2} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d2}^2 \ \text{D2} - \text{a} \ \text{d1} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{8} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} - \text{i} \ \text{a} \ \text{d2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{i} \ \text{a} \ \text{d1} \ \text{D1} \ \text{d2} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d2}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d2}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d2}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{8} \ \text{i} \ \text{a} \ \text{d2}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} - \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1} \ \text{d2} \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1} \ \text{d2} \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1} \ \text{D1} \ \text{d2}^2 \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1} \ \text{d2} \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1} \ \text{D1} \ \text{d2}^2 \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{2} \ \text{a} \ \text{d1}^2 \ \text{D2} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4} \ \text{a} \ \text{d1}^2 \ \text{D1} \ \text{d2}^2 \ \text{e}^{\text{i} \, \text{t}} + \frac{1}{4}$$

$$In[\bullet] = 4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$$

$$Out[\bullet] = 4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$$

Syntax: "2 * Pi *" cannot be followed by

"
$$\left[4 i a d1 - \frac{1}{2} i a d1^2 D1 - 4 a d2 + a d1 D1 d2 + \frac{1}{2} i a D1 d2^2 - \frac{1}{2} a d1^2 D2 - i a d1 d2 D2 + \frac{1}{2} a d2^2 D2\right]$$
".

In[•]:= z33temp2

Out[•]= z33temp2

$$4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$$

In[•]:= z33temp2

$$\textit{Out}[*] = 4 \; \text{\'i} \; \; \text{a} \; \text{d1} \; - \; \frac{1}{2} \; \text{\'i} \; \; \text{a} \; \text{d1}^2 \; \text{D1} \; - \; 4 \; \text{a} \; \text{d2} \; + \; \text{a} \; \text{d1} \; \text{D1} \; \text{d2} \; + \; \frac{1}{2} \; \text{\'i} \; \; \text{a} \; \text{D1} \; \text{d2}^2 \; - \; \frac{1}{2} \; \text{a} \; \text{d1}^2 \; \text{D2} \; - \; \text{\'i} \; \; \text{a} \; \text{d1} \; \text{d2} \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; \text{D2} \; + \; \frac{1}{2} \; \text{a} \; \text{d2}^2 \; + \; \frac{1}{2} \; \text{a} \; + \; \frac{1}{2} \; + \; \frac{1}{2}$$

$$\textit{Out[*]} = \ \frac{1}{2} \ a \ \left(-\ \dot{\mathbb{1}} \ d1 + d2 \right) \ \left(-\ 8 + \ \dot{\mathbb{1}} \ D1 \ d2 + d1 \ \left(D1 - \ \dot{\mathbb{1}} \ D2 \right) + d2 \ D2 \right)$$

$$\ln[*] := \ d1 + i \cdot d1 \cdot r \cdot s^2 - d2 \cdot r \cdot s^2 \ /. \ r \rightarrow \ a \cdot * \left(2 + d1 \cdot * D1 + d2 \cdot * D2 + I \cdot * D1 \cdot * d2 \ - \ I \cdot * d1 \cdot * D2\right)$$

$$\textit{Out[*]} = \ d1 + \texttt{i} \ \ a \ d1 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ \left(2 + d1 \ D1 + \texttt{i} \ D1 \ d2 - \texttt{i} \ d1 \ D2 + d2 \ D2\right) \ s^2 - a \ d2 \ d2 + d2 \ D2$$

In[•]:= Expand $d1 + i a d1 (2 + d1 D1 + i D1 d2 - i d1 D2 + d2 D2) s^2 - a d2 (2 + d1 D1 + i D1 d2 - i d1 D2 + d2 D2) s^2$ Outfo]= $d1 + 2 i a d1 s^2 + i a d1^2 D1 s^2 - 2 a d2 s^2 - 2 a d1 D1 d2 s^2$ i a D1 d2² s² + a d1² D2 s² + 2 i a d1 d2 D2 s² - a d2² D2 s² In[*]:= Collect[z33temp2, s] $Out[*]= 4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$ $ln[\cdot]:= Collect[d1 + 2 i a d1 s^2 + i a d1^2 D1 s^2 - 2 a d2 s^2 -$ 2 a d1 D1 d2 s^2 - $\dot{\mathbf{n}}$ a D1 d2² s^2 + a d1² D2 s^2 + 2 $\dot{\mathbf{n}}$ a d1 d2 D2 s^2 - a d2² D2 s^2 , s $Out[*]= d1 + (2 i a d1 + i a d1^2 D1 - 2 a d2 - 2 a d1 D1 d2 - i a D1 d2^2 + a d1^2 D2 + 2 i a d1 d2 D2 - a d2^2 D2) s^2$ $ln[\cdot] = 2 \pm a \, d1 + \pm a \, d1^2 \, D1 - 2 \, a \, d2 - 2 \, a \, d1 \, D1 \, d2 - \pm a \, D1 \, d2^2 + a \, d1^2 \, D2 + 2 \pm a \, d1 \, d2 \, D2 - a \, d2^2 \, D2$ Outfol= $2 \pm a \, d1 + \pm a \, d1^2 \, D1 - 2 \, a \, d2 - 2 \, a \, d1 \, D1 \, d2 - \pm a \, D1 \, d2^2 + a \, d1^2 \, D2 + 2 \pm a \, d1 \, d2 \, D2 - a \, d2^2 \, D2$ $\ln[\pi] = 4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$ Out[*]= $4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2$ $ln[\cdot] = 2 \pm a \, d1 + \pm a \, d1^2 \, D1 - 2 \, a \, d2 - 2 \, a \, d1 \, D1 \, d2 - \pm a \, D1 \, d2^2 + a \, d1^2 \, D2 + 2 \pm a \, d1 \, d2 \, D2 - a \, d2^2 \, D2 - a \, d2^2$ $\left(4 \pm a \, d1 - \frac{1}{2} \pm a \, d1^2 \, D1 - 4 \, a \, d2 + a \, d1 \, D1 \, d2 + \frac{1}{2} \pm a \, D1 \, d2^2 - \frac{1}{2} \, a \, d1^2 \, D2 - \pm a \, d1 \, d2 \, D2 + \frac{1}{2} \, a \, d2^2 \, D2\right)$ $Out[*]= -2 \pm a d1 + \frac{3}{2} \pm a d1^2 D1 + 2 a d2 - 3 a d1 D1 d2 \frac{3}{2}$ i a D1 d2² + $\frac{3}{2}$ a d1² D2 + 3 i a d1 d2 D2 - $\frac{3}{2}$ a d2² D2 $lo(0) := % /. \{d1 \rightarrow c, D1 \rightarrow k, d2 \rightarrow I * c, D2 \rightarrow -I * k\}$ Out[]= 0 $\ln[\circ] := \left(-2 \text{ in a d1} + \frac{3}{2} \text{ in a d1}^2 \text{ D1} + 2 \text{ a d2} - 3 \text{ a d1 D1 d2} - \frac{3}{2} \text{ a d1} \text{ D1 d2} - \frac{3}{2} \text{ a d1} \text{ D1 d2} \right)$ $\frac{3}{2}$ i a D1 d2² + $\frac{3}{2}$ a d1² D2 + 3 i a d1 d2 D2 - $\frac{3}{2}$ a d2² D2 / a Out[\circ]= $\frac{1}{2} \left(-2 \text{ i a d1} + \frac{3}{2} \text{ i a d1}^2 \text{ D1} + 2 \text{ a d2} - \frac{3}{2} \right)$ 3 a d1 D1 d2 - $\frac{3}{2}$ i a D1 d2² + $\frac{3}{2}$ a d1² D2 + 3 i a d1 d2 D2 - $\frac{3}{2}$ a d2² D2 $ln[\cdot]:=$ Expand $\left[\frac{1}{2}\left(-2 \pm a \, d1 + \frac{3}{2} \pm a \, d1^2 \, D1 + 2 \, a \, d2 - a \, d1^2 \, D1\right)$ 3 a d1 D1 d2 - $\frac{3}{2}$ i a D1 d2² + $\frac{3}{2}$ a d1² D2 + 3 i a d1 d2 D2 - $\frac{3}{2}$ a d2² D2) Out[*]= $-2 \pm d1 + \frac{3}{2} \pm d1^2 D1 + 2 d2 - 3 d1 D1 d2 - \frac{3}{2} \pm D1 d2^2 + \frac{3 d1^2 D2}{2} + 3 \pm d1 d2 D2 - \frac{3 d2^2 D2}{2}$

$$\begin{split} & \inf_{\{e\}:=} \ -2 \ \dot{\mathbf{n}} \ d\mathbf{1} + \frac{3}{2} \ \dot{\mathbf{n}} \ d\mathbf{1}^2 \ D\mathbf{1} + 2 \ d\mathbf{2} - 3 \ d\mathbf{1} \ D\mathbf{1} \ d\mathbf{2} - \frac{3}{2} \ \dot{\mathbf{n}} \ D\mathbf{1} \ d\mathbf{2}^2 + \frac{3 \ d\mathbf{1}^2 \ D\mathbf{2}}{2} + 3 \ \dot{\mathbf{n}} \ d\mathbf{1} \ d\mathbf{2} \ D\mathbf{2} - \frac{3 \ d\mathbf{2}^2 \ D\mathbf{2}}{2} \ / \ . \\ & \left\{ d\mathbf{1} \to \mathbf{c} + \mathbf{e}, \ D\mathbf{1} \to \mathbf{k} + \mathbf{e}, \ d\mathbf{2} \to \mathbf{I} \star \mathbf{c}, \ D\mathbf{2} \to -\mathbf{I} \star \mathbf{k} \right\} \\ & Out[*]_{=} \ 2 \ \dot{\mathbf{n}} \ \mathbf{c} - 2 \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e}) \ - \frac{3}{2} \ \dot{\mathbf{n}} \ \mathbf{c}^2 \ \mathbf{k} + 3 \ \dot{\mathbf{n}} \ \mathbf{c} \ (\mathbf{c} + \mathbf{e}) \ \mathbf{k} - \frac{3}{2} \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e})^2 \ \mathbf{k} + \\ & \frac{3}{2} \ \dot{\mathbf{n}} \ \mathbf{c}^2 \ \left(\mathbf{e} + \mathbf{k} \right) - 3 \ \dot{\mathbf{n}} \ \mathbf{c} \ (\mathbf{c} + \mathbf{e}) \ + \frac{3}{2} \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e})^2 \ \left(\mathbf{e} + \mathbf{k} \right) \\ & In[*]_{:=} \ \mathbf{Simplify} \left[2 \ \dot{\mathbf{n}} \ \mathbf{c} - 2 \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e}) \ - \frac{3}{2} \ \dot{\mathbf{n}} \ \mathbf{c}^2 \ \mathbf{k} + 3 \ \dot{\mathbf{n}} \ \mathbf{c} \ (\mathbf{c} + \mathbf{e}) \ \mathbf{k} - \\ & \frac{3}{2} \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e})^2 \ \mathbf{k} + \frac{3}{2} \ \dot{\mathbf{n}} \ \mathbf{c}^2 \ \left(\mathbf{e} + \mathbf{k} \right) - 3 \ \dot{\mathbf{n}} \ \mathbf{c} \ (\mathbf{c} + \mathbf{e}) \ \left(\mathbf{e} + \mathbf{k} \right) + \frac{3}{2} \ \dot{\mathbf{n}} \ (\mathbf{c} + \mathbf{e})^2 \ \left(\mathbf{e} + \mathbf{k} \right) \right] \end{split}$$

Out[=]= $\frac{1}{2}$ i $e \left(-4 + 3 e^2\right)$