

In[*]:= **MatrixExp** $\left[\begin{pmatrix} a & b \\ 0 & c \end{pmatrix}\right]$ // **MatrixForm**

Out[*]//**MatrixForm**=

$$\begin{pmatrix} e^a & \frac{b(e^a - e^c)}{a - c} \\ 0 & e^c \end{pmatrix}$$

In[*]:= **bad** = $-e^{-2\lambda\xi_{1,1}+2\lambda\xi_{1,3}}\lambda^3\eta_{1,3}^2\xi_{1,3} +$

$$\frac{4e^{-\lambda\xi_{1,1}+\lambda\xi_{1,2}}\eta_{1,3}\eta_{2,2}\xi_{1,2}}{(\xi_{1,1}-\xi_{1,2})^3} - \frac{2e^{-\lambda\xi_{1,1}+\lambda\xi_{1,2}}\lambda^2\eta_{1,3}\eta_{2,2}\xi_{1,2}}{-\xi_{1,1}+\xi_{1,2}} -$$

$$\frac{4e^{-\lambda\xi_{1,1}+\lambda\xi_{1,2}}\lambda\eta_{1,3}\eta_{2,2}\xi_{1,2}}{(\xi_{1,1}-\xi_{1,2})(-\xi_{1,1}+\xi_{1,2})} - \frac{4e^{-\lambda\xi_{1,1}-\lambda\xi_{1,2}+2\lambda\xi_{1,3}}\eta_{2,3}\eta_{2,3}\xi_{1,1}\xi_{1,2}}{(\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4} +$$

$$\frac{8e^{-\lambda\xi_{1,1}-\lambda\xi_{1,2}+2\lambda\xi_{1,3}}\eta_{2,3}\eta_{2,3}\xi_{1,2}\xi_{1,2}}{(\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4} - \frac{4e^{-\lambda\xi_{1,1}+\lambda\xi_{1,3}}\eta_{1,2}\eta_{2,3}\xi_{1,2}}{(\xi_{1,1}-\xi_{1,3})^3} -$$

$$\frac{4e^{-\lambda\xi_{1,1}+\lambda\xi_{1,3}}\eta_{2,3}\eta_{2,3}\xi_{1,2}}{(\xi_{1,1}-\xi_{1,3})^3} + \frac{4e^{-2\lambda\xi_{1,1}+\lambda\xi_{1,2}+\lambda\xi_{1,3}}\eta_{2,2}\eta_{2,3}\xi_{1,1}\xi_{1,2}}{(2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4} -$$

$$\frac{8e^{-2\lambda\xi_{1,1}+\lambda\xi_{1,2}+\lambda\xi_{1,3}}\eta_{2,2}\eta_{2,3}\xi_{1,2}\xi_{1,2}}{(2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4} + \frac{4e^{-\lambda\xi_{1,2}+\lambda\xi_{1,3}}\eta_{1,3}\eta_{2,3}\xi_{1,2}}{(\xi_{1,2}-\xi_{1,3})^3} -$$

$$\frac{(64\eta_{1,3}\eta_{2,2}\xi_{1,1}^{11}\xi_{1,2}\xi_{1,2}^3)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 (\xi_{1,1}-\xi_{1,3})^3 } +$$

$$\frac{(2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(64\eta_{1,2}\eta_{2,3}\xi_{1,1}^{11}\xi_{1,2}\xi_{1,2}^3)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3$$

$$(\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 (\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) -$$

$$\frac{(4\eta_{2,2}\eta_{2,3}\xi_{1,1}^{11}\xi_{1,2}\xi_{1,2}^3)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 } -$$

$$\frac{(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(128\eta_{1,3}\eta_{2,2}\xi_{1,1}^{10}\xi_{1,2}\xi_{1,2}^4)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4$$

$$(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) -$$

$$\frac{(64\eta_{1,2}\eta_{2,3}\xi_{1,1}^{10}\xi_{1,2}\xi_{1,2}^4)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 } +$$

$$\frac{(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(4\eta_{2,2}\eta_{2,3}\xi_{1,1}^{10}\xi_{1,2}\xi_{1,2}^4)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4$$

$$(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) +$$

$$\frac{(32\eta_{1,3}\eta_{2,2}\xi_{1,1}^9\xi_{1,2}\xi_{1,2}^5)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 } -$$

$$\frac{(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(224\eta_{1,2}\eta_{2,3}\xi_{1,1}^9\xi_{1,2}\xi_{1,2}^5)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4$$

$$(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) +$$

$$\frac{(20\eta_{2,2}\eta_{2,3}\xi_{1,1}^9\xi_{1,2}\xi_{1,2}^5)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 } +$$

$$\frac{(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(160\eta_{1,3}\eta_{2,2}\xi_{1,1}^8\xi_{1,2}\xi_{1,2}^6)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4$$

$$(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) +$$

$$\frac{(256\eta_{1,2}\eta_{2,3}\xi_{1,1}^8\xi_{1,2}\xi_{1,2}^6)}{((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4 } -$$

$$\frac{(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3)}{(12\eta_{2,2}\eta_{2,3}\xi_{1,1}^8\xi_{1,2}\xi_{1,2}^6)} \Big/ ((\xi_{1,1}-\xi_{1,2})^3 (\xi_{1,1}+\xi_{1,2}-2\xi_{1,3})^4$$

$$(\xi_{1,1}-\xi_{1,3})^3 (2\xi_{1,1}-\xi_{1,2}-\xi_{1,3})^4 (\xi_{1,2}-\xi_{1,3})^3) -$$

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$$\begin{aligned}
& \left(12 \eta_{1,3} \eta_{2,3} \xi_{1,1} \xi_{2,2}^2 \xi_{2,3} \xi_{3,3}^{11} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) + \\
& \left(64 \eta_{1,3} \eta_{2,3} \xi_{2,2}^3 \xi_{2,3} \xi_{3,3}^{11} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) - \\
& \left(64 \eta_{1,3} \eta_{2,3} \xi_{2,2}^3 \xi_{2,3} \xi_{3,3}^{11} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) - \\
& \left(4 \eta_{1,3} \eta_{2,3} \xi_{2,2}^3 \xi_{2,3} \xi_{3,3}^{11} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) - \\
& \left(4768 \eta_{1,3} \eta_{2,2} \xi_{1,1}^2 \xi_{1,2} \xi_{3,3}^{12} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) - \\
& \left(1280 \eta_{1,3} \eta_{2,2} \xi_{1,1} \xi_{1,2} \xi_{2,2} \xi_{3,3}^{12} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) + \\
& \left(224 \eta_{1,3} \eta_{2,2} \xi_{1,2} \xi_{2,2}^2 \xi_{3,3}^{12} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) + \\
& \left(832 \eta_{1,3} \eta_{2,2} \xi_{1,1} \xi_{1,2} \xi_{3,3}^{13} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) + \\
& \left(64 \eta_{1,3} \eta_{2,2} \xi_{1,2} \xi_{2,2} \xi_{3,3}^{13} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) - \\
& \left(64 \eta_{1,3} \eta_{2,2} \xi_{1,2} \xi_{3,3}^{14} \right) / \left((\xi_{1,1} - \xi_{2,2})^3 (\xi_{1,1} + \xi_{2,2} - 2 \xi_{3,3})^4 \right. \\
& \quad \left. (\xi_{1,1} - \xi_{3,3})^3 (2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^4 (\xi_{2,2} - \xi_{3,3})^3 \right) + \\
& \frac{2 e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda^2 \eta_{1,2} \eta_{2,3} \xi_{1,2}}{-\xi_{1,1} + \xi_{3,3}} + \frac{e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda^3 \eta_{1,2} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{-\xi_{1,1} + \xi_{3,3}} + \\
& \frac{2 e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda^2 \eta_{1,2} \eta_{2,3} \xi_{1,2,3}}{-\xi_{1,1} + \xi_{3,3}} + \frac{4 e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda \eta_{1,2} \eta_{2,3} \xi_{1,2}}{(\xi_{1,1} - \xi_{3,3}) (-\xi_{1,1} + \xi_{3,3})} + \\
& \frac{4 e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda \eta_{1,2,3} \eta_{2,3} \xi_{1,2,3}}{(\xi_{1,1} - \xi_{3,3}) (-\xi_{1,1} + \xi_{3,3})} - \frac{e^{-\lambda \xi_{1,1} + \lambda \xi_{3,3}} \lambda^3 \eta_{1,2} \eta_{2,3} \xi_{1,2} \xi_{3,3}}{-\xi_{1,1} + \xi_{3,3}} - \\
& \frac{e^{-\lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda^2 \eta_{1,2} \eta_{2,3} \xi_{1,2,2}}{-\xi_{2,2} + \xi_{3,3}} - \frac{2 e^{-\lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda^2 \eta_{1,3} \eta_{2,3} \xi_{1,2,3}}{-\xi_{2,2} + \xi_{3,3}} - \\
& \frac{4 e^{-\lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda \eta_{1,3} \eta_{2,3} \xi_{1,2,3}}{(\xi_{2,2} - \xi_{3,3}) (-\xi_{2,2} + \xi_{3,3})} + \frac{e^{-\lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda^2 \eta_{1,2} \eta_{2,3} \xi_{1,3,3}}{-\xi_{2,2} + \xi_{3,3}} + \\
& \frac{2 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda^3 \eta_{2,2} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{-2 \xi_{1,1} + \xi_{2,2} + \xi_{3,3}} - \\
& \frac{4 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda \eta_{2,2} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{(2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^2 (-2 \xi_{1,1} + \xi_{2,2} + \xi_{3,3})} + \\
& \frac{8 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda \eta_{2,2} \eta_{2,3} \xi_{1,2} \xi_{1,2,2}}{(2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3})^2 (-2 \xi_{1,1} + \xi_{2,2} + \xi_{3,3})} - \\
& \frac{2 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{2,2} + \lambda \xi_{3,3}} \lambda^2 \eta_{2,2} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{(2 \xi_{1,1} - \xi_{2,2} - \xi_{3,3}) (-2 \xi_{1,1} + \xi_{2,2} + \xi_{3,3})} +
\end{aligned}$$

$$\begin{aligned}
& \frac{4 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{1,2} + \lambda \xi_{1,3}} \lambda^2 \eta_{1,2} \eta_{1,3} \xi_{1,2} \xi_{1,2}}{(2 \xi_{1,1} - \xi_{1,2} - \xi_{1,3}) (-2 \xi_{1,1} + \xi_{1,2} + \xi_{1,3})} - \\
& \frac{2 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{1,2} + \lambda \xi_{1,3}} \lambda^3 \eta_{1,2} \eta_{1,3} \xi_{1,2} \xi_{1,3}}{-2 \xi_{1,1} + \xi_{1,2} + \xi_{1,3}} - \\
& \frac{4 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{1,2} + \lambda \xi_{1,3}} \lambda \eta_{1,2} \eta_{1,3} \xi_{1,2} \xi_{1,3}}{(2 \xi_{1,1} - \xi_{1,2} - \xi_{1,3})^2 (-2 \xi_{1,1} + \xi_{1,2} + \xi_{1,3})} - \\
& \frac{2 e^{-2 \lambda \xi_{1,1} + \lambda \xi_{1,2} + \lambda \xi_{1,3}} \lambda^2 \eta_{1,2} \eta_{1,3} \xi_{1,2} \xi_{1,3}}{(2 \xi_{1,1} - \xi_{1,2} - \xi_{1,3}) (-2 \xi_{1,1} + \xi_{1,2} + \xi_{1,3})} + \\
& \frac{e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda^3 \eta_{1,3} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3}} - \\
& \frac{e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda^3 \eta_{1,3} \eta_{2,3} \xi_{1,2} \xi_{1,3}}{-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3}} + \\
& \frac{4 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda \eta_{1,3} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3})^2 (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} - \\
& \frac{8 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda \eta_{1,3} \eta_{2,3} \xi_{1,2} \xi_{1,3}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3})^2 (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} + \\
& \frac{2 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda^2 \eta_{1,3} \eta_{2,3} \xi_{1,1} \xi_{1,2}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3}) (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} - \\
& \frac{4 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda^2 \eta_{1,3} \eta_{2,3} \xi_{1,2} \xi_{1,3}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3}) (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} + \\
& \frac{4 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda \eta_{1,3} \eta_{2,3} \xi_{1,2} \xi_{1,3}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3})^2 (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} + \\
& \frac{2 e^{-\lambda \xi_{1,1} - \lambda \xi_{1,2} + 2 \lambda \xi_{1,3}} \lambda^2 \eta_{1,3} \eta_{2,3} \xi_{1,2} \xi_{1,3}}{(\xi_{1,1} + \xi_{1,2} - 2 \xi_{1,3}) (-\xi_{1,1} - \xi_{1,2} + 2 \xi_{1,3})} ;
\end{aligned}$$

In[*]:= bad /. { $\eta_{1,2} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{1,2} \rightarrow 0$,
 $\xi_{1,2} \rightarrow 0$, $\eta_{2,3} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$, $\xi_{1,2} \rightarrow 0$ }

Out[*]=

0

In[*]:= bad /. { $\eta_{1,2} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$,
 $\xi_{1,3} \rightarrow 0$, $\xi_{1,2} \rightarrow 0$, $\eta_{2,3} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$ }

Out[*]=

0

In[*]:= bad /. { $\eta_{1,2} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$,
 $\xi_{1,2} \rightarrow 0$, $\xi_{1,2} \rightarrow 0$, $\eta_{2,3} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$ }

Out[*]=

0

In[*]:= **bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,1,2} \rightarrow 0$, $\eta_{2,2,3} \rightarrow 0$, $\eta_{2,1,2} \rightarrow 0$, $\eta_{2,1,3} \rightarrow 0$ }

Out[*]=

0

In[*]:= **bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,1,2} \rightarrow 0$, $\eta_{2,2,3} \rightarrow 0$, $\eta_{2,1,2} \rightarrow 0$ }

Out[*]=

0

In[*]:= **bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,1,2} \rightarrow 0$, $\eta_{2,2,3} \rightarrow 0$ }

Out[*]=

0

In[*]:= **bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,1,2} \rightarrow 0$ }

Out[*]=

0

In[*]:= **FullSimplify**[**bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$ }]

Out[*]=

$$\frac{1}{(-2 \xi_{1,1,1} + \xi_{1,2,2} + \xi_{1,3,3})^4} 2 e^{-2 \lambda \xi_{1,1}} \eta_{2,1,2} \eta_{2,1,3} \xi_{1,1,2} \left(-2 e^{2 \lambda \xi_{1,1}} (\xi_{1,1,1} - 2 \xi_{1,2,2} + \xi_{1,3,3}) + e^{\lambda (\xi_{1,2,2} + \xi_{1,3,3})} (-8 \lambda^3 \xi_{1,1,1}^4 - 4 \xi_{1,2,2} + 2 \xi_{1,3,3} + 4 \lambda^2 \xi_{1,1,1}^3 (1 + 3 \lambda \xi_{1,2,2} + 5 \lambda \xi_{1,3,3}) - \lambda (\xi_{1,2,2} + \xi_{1,3,3}) (\lambda \xi_{1,2,2}^2 (2 + \lambda \xi_{1,3,3}) + \xi_{1,3,3} (2 + \lambda \xi_{1,3,3} (-1 + \lambda \xi_{1,3,3})) + \xi_{1,2,2} (-4 + \lambda \xi_{1,3,3} (1 + 2 \lambda \xi_{1,3,3}))) - 2 \lambda \xi_{1,1,1}^2 (-2 + 3 \lambda (\lambda \xi_{1,2,2}^2 + 3 \lambda \xi_{1,3,3}^2 + \xi_{1,2,2} (2 + 4 \lambda \xi_{1,3,3}))) + \xi_{1,1,1} (2 + \lambda (\lambda^2 \xi_{1,2,2}^3 + 9 \lambda \xi_{1,2,2}^2 (1 + \lambda \xi_{1,3,3}) + \xi_{1,2,2} (-10 + 3 \lambda \xi_{1,3,3} (2 + 5 \lambda \xi_{1,3,3})) + \xi_{1,3,3} (2 + \lambda \xi_{1,3,3} (-3 + 7 \lambda \xi_{1,3,3}))) \right) \right)$$

In[*]:= **FullSimplify**[**bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,2} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$ }]

Out[*]=

$$-e^{2 \lambda (-\xi_{1,1,1} + \xi_{1,3,3})} \lambda^3 \eta_{2,1,3}^2 \xi_{1,1,3}$$

In[*]:= **FullSimplify**[**bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,3,3} \rightarrow 0$ }]

Out[*]=

$$\frac{1}{(-2 \xi_{1,1,1} + \xi_{1,2,2})^4} 2 e^{-2 \lambda \xi_{1,1,1}} \eta_{2,1,2} \eta_{2,1,3} \xi_{1,1,2} \left(-2 e^{2 \lambda \xi_{1,1,1}} (\xi_{1,1,1} - 2 \xi_{1,2,2}) + e^{\lambda \xi_{1,2,2}} (2 \xi_{1,1,1} (1 + 2 \lambda \xi_{1,1,1} (1 + \lambda \xi_{1,1,1} (1 - 2 \lambda \xi_{1,1,1}))) + 2 (-2 + \lambda \xi_{1,1,1} (-5 + 6 \lambda \xi_{1,1,1} (-1 + \lambda \xi_{1,1,1}))) \xi_{1,2,2} + \lambda (4 + 3 \lambda \xi_{1,1,1} (3 - 2 \lambda \xi_{1,1,1})) \xi_{1,2,2}^2 + \lambda^2 (-2 + \lambda \xi_{1,1,1}) \xi_{1,2,2}^3 \right)$$

In[*]:= **FullSimplify**[**bad** /. { $\eta_{1,2,3} \rightarrow 0$, $\eta_{1,1,2} \rightarrow 0$, $\eta_{1,1,3} \rightarrow 0$, $\xi_{1,1,3} \rightarrow 0$, $\xi_{1,2,3} \rightarrow 0$, $\xi_{1,1,1} \rightarrow 0$ }]

Out[*]=

$$\frac{1}{(\xi_{1,2,2} + \xi_{1,3,3})^4} 2 \eta_{2,1,2} \eta_{2,1,3} \xi_{1,1,2} \left(4 \xi_{1,2,2} - 2 \xi_{1,3,3} - e^{\lambda (\xi_{1,2,2} + \xi_{1,3,3})} (\lambda^2 \xi_{1,2,2}^3 (2 + \lambda \xi_{1,3,3}) + \xi_{1,3,3} (-1 + \lambda \xi_{1,3,3}) (2 + \lambda^2 \xi_{1,3,3}^2) + \xi_{1,2,2} (4 - 2 \lambda \xi_{1,3,3} + 3 \lambda^3 \xi_{1,3,3}^3) + \lambda \xi_{1,2,2}^2 (-4 + 3 \lambda \xi_{1,3,3} (1 + \lambda \xi_{1,3,3})) \right)$$

In[*]:= FullSimplify[bad /. { $\eta_{2,3} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$, $\xi_{2,2} \rightarrow 0$ }]

Out[*]=

$$\frac{1}{(-2 \xi_{1,1} + \xi_{3,3})^4} 2 e^{-2 \lambda \xi_{1,1}} \eta_{2,2} \eta_{2,3} \xi_{1,2} \left(-2 e^{2 \lambda \xi_{1,1}} (\xi_{1,1} + \xi_{3,3}) + e^{\lambda \xi_{3,3}} \left(-8 \lambda^3 \xi_{1,1}^4 + 4 \lambda^2 \xi_{1,1}^3 (1 + 5 \lambda \xi_{3,3}) + 2 \lambda \xi_{1,1}^2 (2 - 9 \lambda^2 \xi_{3,3}^2) - \xi_{3,3} (-1 + \lambda \xi_{3,3}) (2 + \lambda^2 \xi_{3,3}^2) + \xi_{1,1} (2 + \lambda \xi_{3,3} (2 + \lambda \xi_{3,3} (-3 + 7 \lambda \xi_{3,3}))) \right) \right)$$

In[*]:= FullSimplify[

FullSimplify[bad /. { $\eta_{2,3} \rightarrow 0$, $\eta_{1,2} \rightarrow 0$, $\eta_{1,3} \rightarrow 0$, $\xi_{1,3} \rightarrow 0$, $\xi_{2,3} \rightarrow 0$, $\xi_{2,2} \rightarrow 0$ }] /. $\xi_{1,1} \rightarrow 0$]

Out[*]=

$$\frac{2 \eta_{2,2} \eta_{2,3} \xi_{1,2} (-2 - e^{\lambda \xi_{3,3}} (-1 + \lambda \xi_{3,3}) (2 + \lambda^2 \xi_{3,3}^2))}{\xi_{3,3}^3}$$

1 + 1