In[•]:=
```
CF[ℰ_] := ℰ /. e^L_ :> e^Expand[L]
```

In[•]:=
```
msol =
 Echo[# → Simplify[DSolve[{# - ϵ ξ1_{1,1} f_{1,2}[λ] + ϵ ξ1_{2,2} f_{1,2}[λ] - ϵ ξ2_{1,1} f_{1,2}[λ] + ϵ ξ2_{2,2} f_{1,2}[λ] -
          ϵ f_{1,2}'[λ] == 0, f_{1,2}[0] == 0},
       f_{1,2}[λ], λ
      ]]] & /@
  (List @@ (6 ϵ λ^2 η1_{1,2} ξ1_{1,2} ξ2_{1,2} + 2 ϵ λ^3 η1_{1,2} ξ1_{1,1} ξ1_{1,2} ξ2_{1,2} - 2 ϵ λ^3 η1_{1,2} ξ1_{1,2} ξ1_{2,2} ξ2_{1,2} +
     2 ϵ λ^3 η1_{1,2} ξ1_{1,2} ξ2_{1,1} ξ2_{1,2} + 3 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^2 η1_{1,2} ξ2_{1,2}^2 + e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} ξ1_{1,1} ξ2_{1,2}^2 -
     e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} ξ1_{2,2} ξ2_{1,2}^2 + 2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} ξ2_{1,1} ξ2_{1,2}^2 - 2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ
      λ η1_{2,3} ξ2_{1,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ1_{1,1} ξ2_{1,3} + 3 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{1,3} ξ1_{1,2} ξ2_{1,3} +
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ1_{1,1} ξ1_{1,2} ξ2_{1,3} + e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ1_{2,2} ξ2_{1,3} -
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ1_{1,2} ξ1_{2,2} ξ2_{1,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ2_{1,1} ξ2_{1,3} +
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ1_{1,2} ξ2_{1,1} ξ2_{1,3} - 2 ϵ λ^3 η1_{1,2} ξ1_{1,2} ξ2_{1,2} ξ2_{2,2} -
     2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} ξ2_{1,2}^2 ξ2_{2,2} - 3 e^{-λ ξ2_{1,1}+2 λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ1_{1,2} ξ2_{2,3} -
     e^{-λ ξ2_{1,1}+2 λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{1,1} ξ1_{1,2} ξ2_{2,3} + e^{-λ ξ2_{1,1}+2 λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{1,2} ξ1_{2,2} ξ2_{2,3} -
     3 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ2_{1,2} ξ2_{2,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{1,1} ξ2_{1,2} ξ2_{2,3} -
     4 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ1_{1,2} ξ2_{1,2} ξ2_{2,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{1,1} ξ1_{1,2} ξ2_{1,2} ξ2_{2,3} +
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{2,2} ξ2_{1,2} ξ2_{2,3} + e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{1,2} ξ1_{2,2} ξ2_{1,2} ξ2_{2,3} -
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ2_{1,1} ξ2_{1,2} ξ2_{2,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{1,2} ξ2_{1,1} ξ2_{1,2} ξ2_{2,3} -
     4 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ2_{1,2}^2 ξ2_{2,3} - e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{1,1} ξ2_{1,2}^2 ξ2_{2,3} +
     e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{2,2} ξ2_{1,2}^2 ξ2_{2,3} - 2 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ2_{1,1} ξ2_{1,2}^2 ξ2_{2,3} -
     e^{-λ ξ2_{1,1}+2 λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{1,2} ξ2_{2,2} ξ2_{2,3} + e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ2_{1,2}^2 ξ2_{2,2} ξ2_{2,3} +
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} ξ2_{1,3} ξ2_{3,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} ξ1_{1,2} ξ2_{1,3} ξ2_{3,3} +
     e^{-λ ξ2_{1,1}+2 λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ1_{1,2} ξ2_{2,3} ξ2_{3,3} + e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} ξ2_{1,2} ξ2_{2,3} ξ2_{3,3} +
     e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ1_{1,2} ξ2_{1,2} ξ2_{2,3} ξ2_{3,3} + e^{λ ξ2_{2,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} ξ2_{1,2}^2 ξ2_{2,3} ξ2_{3,3}))
```

Out[•]=

In[•]:=
```
Simplify@Total[msol[[All, 2, 1, 1, 2]]]
```

Out[•]=
$$-e^{-\lambda\,(\xi 2_{1,1}+\xi 2_{2,2}+\xi 2_{3,3})}\,\lambda^2\,\left(-e^{\lambda\,(\xi 2_{1,1}+\xi 2_{3,3})}\,\lambda\,\eta 1_{1,2}\,\xi 2_{1,2}\,\left(2\,e^{\lambda\,\xi 2_{2,2}}\,\xi 1_{1,2}+e^{\lambda\,\xi 2_{1,1}}\,\xi 2_{1,2}\right)+e^{2\,\lambda\,\xi 2_{2,2}}\,\eta 1_{2,3}\,\left(e^{\lambda\,\xi 2_{1,1}}\,\xi 2_{1,3}+\lambda\,\left(e^{\lambda\,\xi 2_{2,2}}\,\xi 1_{1,2}+e^{\lambda\,\xi 2_{1,1}}\,\xi 2_{1,2}\right)\,\xi 2_{2,3}\right)+e^{\lambda\,(\xi 2_{1,1}+\xi 2_{2,2})}\,\lambda\,\eta 1_{1,3}\,\left(e^{\lambda\,\xi 2_{1,1}}\,\lambda\,\xi 2_{1,2}^2\,\xi 2_{2,3}-e^{\lambda\,\xi 2_{2,2}}\,\xi 1_{1,2}\,(\xi 2_{1,3}-\lambda\,\xi 2_{1,2}\,\xi 2_{2,3})\right)\right)$$

In[•]:=
```
Expand@CF@Together@Total[msol[[All, 2, 1, 1, 2]]]
```

Out[•]=
$$2\,\lambda^3\,\eta 1_{1,2}\,\xi 1_{1,2}\,\xi 2_{1,2}+e^{\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\,\lambda^3\,\eta 1_{1,2}\,\xi 2_{1,2}^2-e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^2\,\eta 1_{2,3}\,\xi 2_{1,3}+e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{1,3}\,\xi 1_{1,2}\,\xi 2_{1,3}-e^{-\lambda\,\xi 2_{1,1}+2\,\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{2,3}\,\xi 1_{1,2}\,\xi 2_{2,3}-e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{2,3}\,\xi 1_{2,2}\,\xi 2_{1,3}\,\xi 2_{2,3}-e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^4\,\eta 1_{1,3}\,\xi 1_{1,2}\,\xi 2_{1,2}\,\xi 2_{2,3}$$

```
In[•]:= s = 0; k = 0;
        Do[
         s = ExpandDenominator@ExpandNumerator@Together@CF[s + t];
         Echo[(++k) → Short[Numerator[s]] / Factor@Denominator[s]],
         {t, msol[[All, 2, 1, 1, 2]]}
        ]
```

» 1 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}}\,\left(\text{<<22>>}+6\ \text{<<5>>}\ \xi 2_{2,2}^2\right)}{\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^3}$

» 2 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}}\ \text{<<1>>}}{\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 3 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}}\,\left(\text{<<84>>}+2\ \text{<<6>>}\ \xi 2_{\text{<<1>>}}^3\right)}{\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 4 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}}\ \text{<<1>>}}{\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 5 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\ (\text{<<685>>}+12\ \text{<<4>>}\ \text{<<1>>})}{\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^3\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 6 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\ \text{<<1>>}}{\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 7 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\ (\text{<<1227>>}+8\ \text{<<5>>}\ \text{<<1>>})}{\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 8 → $\frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\ \text{<<1>>}}{\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4}$

» 9 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^2\right)$

» 10 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ (\text{<<10746>>}+\text{<<1>>})\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^3\right)$

» 11 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ (\text{<<12809>>}+\text{<<1>>})\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^3\right)$

» 12 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^4\right)$

» 13 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^4\right)$

» 14 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^4\right)$

» 15 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^4\right)$

» 16 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \text{<<1>>}\right)\Big/\left(\left(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{2,2}\right)^4\left(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3}\right)^4\right)$

$$\text{» 17} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-2\,\xi 2_{2,2})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4}$$

$$\text{» 18} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ (\ll 254\gg+\ll 1\gg)}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4}$$

$$\text{» 19} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^3}$$

$$\text{» 20} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 21} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 22} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 23} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 24} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 25} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 26} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 27} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 28} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 29} \to \frac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4}$$

$$\text{» 30} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^4\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 31} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 32} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 33} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 34} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 35} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

$$\text{» 36} \to \left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg\right) \Big/ \left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\,(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$$

» 37 → $\left(e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ (\ll 65\,561\gg+\ll 1\gg)\right)\Big/$
$\left((\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\ (\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5\ (\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{2,2}-\xi 2_{3,3})^4\right)$

» 38 → $\dfrac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\ (\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5}$

» 39 → $\dfrac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+\xi 2_{1,1}-\xi 2_{3,3})^5\ (\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5}$

» 40 → $\dfrac{e^{-\lambda\,\xi 1_{1,1}-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\ \ll 1\gg}{(\xi 1_{1,1}-\xi 1_{2,2}+2\,\xi 2_{1,1}-\xi 2_{2,2}-\xi 2_{3,3})^5}$

» 41 → $e^{-\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\left(2\,e^{\lambda\,\xi 2_{1,1}+\lambda\,\ll 1\gg+\lambda\,\xi 2_{\ll 1\gg}}\ \lambda^3\,\eta 1_{1,2}\,\xi 1_{1,2}\,\xi 2_{1,2}+\ll 12\gg\right)$

In[•]:=
```
Expand@CF@s
```

Out[•]=

$$2\,\lambda^3\,\eta 1_{1,2}\,\xi 1_{1,2}\,\xi 2_{1,2}+e^{\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{2,2}}\,\lambda^3\,\eta 1_{1,2}\,\xi 2_{1,2}^2-e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^2\,\eta 1_{2,3}\,\xi 2_{1,3}+$$
$$e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{1,3}\,\xi 1_{1,2}\,\xi 2_{1,3}-e^{-\lambda\,\xi 2_{1,1}+2\,\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{2,3}\,\xi 1_{1,2}\,\xi 2_{2,3}-$$
$$e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^3\,\eta 1_{2,3}\,\xi 2_{1,2}\,\xi 2_{2,3}-e^{\lambda\,\xi 2_{2,2}-\lambda\,\xi 2_{3,3}}\,\lambda^4\,\eta 1_{1,3}\,\xi 1_{1,2}\,\xi 2_{1,2}\,\xi 2_{2,3}-e^{\lambda\,\xi 2_{1,1}-\lambda\,\xi 2_{3,3}}\,\lambda^4\,\eta 1_{1,3}\,\xi 2_{1,2}^2\,\xi 2_{2,3}$$

In[•]:=
```
msol =
 Echo[# → Simplify[DSolve[{# + ϵ ξ1_{1,1} g_{1,3}[λ] - ϵ ξ1_{3,3} g_{1,3}[λ] + ϵ ξ2_{1,1} g_{1,3}[λ] - ϵ ξ2_{3,3} g_{1,3}[λ] -
          ϵ g_{1,3}'[λ] == 0, g_{1,3}[0] == 0},
       g_{1,3}[λ], λ
      ]]] & /@
  (List @@ (-2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ η1_{2,3} η2_{1,2} + e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} η2_{1,2} ξ1_{1,1} - 2 ϵ λ^2 η1_{1,2} η2_{1,3} ξ1_{1,2} -
    2 ϵ λ^3 η1_{1,2} η2_{1,3} ξ1_{1,1} ξ1_{1,2} + 2 ϵ λ^3 η1_{1,2} η2_{1,3} ξ1_{1,2} ξ1_{2,2} - 2 ϵ λ^2 η1_{2,3} η2_{1,3} ξ1_{2,3} -
    2 ϵ λ^3 η1_{2,3} η2_{1,3} ξ1_{2,2} ξ1_{2,3} - e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} η2_{1,2} ξ1_{3,3} + 2 ϵ λ^3 η1_{2,3} η2_{1,3} ξ1_{2,3} ξ1_{3,3} +
    e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} η2_{1,2} ξ2_{1,1} - 4 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{1,2} η1_{1,3} ξ2_{1,2} -
    3 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^2 η1_{1,3} η2_{1,2} ξ2_{1,2} - 2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^2 η1_{1,2} η2_{1,3} ξ2_{1,2} +
    e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η2_{1,2} ξ1_{1,1} ξ2_{1,2} - 2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} η2_{1,3} ξ1_{1,1} ξ2_{1,2} +
    2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} η2_{1,3} ξ1_{2,2} ξ2_{1,2} - 2 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ1_{2,3} ξ2_{1,2} -
    2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,3} η2_{1,3} ξ1_{2,3} ξ2_{1,2} - 2 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{2,2} ξ1_{2,3} ξ2_{1,2} -
    2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{2,2} ξ1_{2,3} ξ2_{1,2} - e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η2_{1,2} ξ1_{3,3} ξ2_{1,2} +
    2 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{2,3} ξ1_{3,3} ξ2_{1,2} + 2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{2,3} ξ1_{3,3} ξ2_{1,2} -
    2 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,2} η1_{1,3} ξ2_{1,1} ξ2_{1,2} - 2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} η2_{1,3} ξ2_{1,1} ξ2_{1,2} -
    3 e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^2 η1_{1,3}^2 ξ2_{1,3} + e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ1_{1,1} ξ2_{1,3} -
    e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ1_{3,3} ξ2_{1,3} - e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ2_{1,1} ξ2_{1,3} -
    e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} η2_{1,2} ξ2_{2,2} + 2 e^{2 λ ξ2_{1,1}-λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,2} η1_{1,3} ξ2_{1,2} ξ2_{2,2} +
    2 e^{λ ξ2_{1,1}-λ ξ2_{2,2}} ϵ λ^3 η1_{1,2} η2_{1,3} ξ2_{1,2} ξ2_{2,2} - e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^2 η1_{1,3} η1_{2,3} ξ2_{2,3} -
    2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^2 η1_{2,3} η2_{1,3} ξ2_{2,3} - e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η1_{2,3} ξ1_{1,1} ξ2_{2,3} +
    2 e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ1_{1,2} ξ2_{2,3} + 2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η2_{1,3} ξ1_{1,2} ξ2_{2,3} +
    2 e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{1,1} ξ1_{1,2} ξ2_{2,3} + 2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{1,1} ξ1_{1,2} ξ2_{2,3} -
    2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} η2_{1,3} ξ1_{2,2} ξ2_{2,3} - 2 e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{1,2} ξ1_{2,2} ξ2_{2,3} -
    2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{1,2} ξ1_{2,2} ξ2_{2,3} + e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η1_{2,3} ξ1_{3,3} ξ2_{2,3} +
    2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} η2_{1,3} ξ1_{3,3} ξ2_{2,3} + e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{1,1} ξ2_{1,2} ξ2_{2,3} +
    2 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{1,1} ξ2_{1,2} ξ2_{2,3} - 2 e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{2,2} ξ2_{1,2} ξ2_{2,3} -
    4 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ1_{2,2} ξ2_{1,2} ξ2_{2,3} + e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ1_{3,3} ξ2_{1,2} ξ2_{2,3} +
    2 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ2_{1,1} ξ2_{1,2} ξ2_{2,3} - e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η1_{2,3} ξ2_{2,2} ξ2_{2,3} -
    2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} η2_{1,3} ξ2_{2,2} ξ2_{2,3} - 2 e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ2_{1,2} ξ2_{2,2} ξ2_{2,3} -
    4 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ2_{1,2} ξ2_{2,2} ξ2_{2,3} + e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3}^2 ξ2_{1,3} ξ2_{3,3} +
    e^{λ ξ2_{1,1}+λ ξ2_{2,2}-2 λ ξ2_{3,3}} ϵ λ^3 η1_{1,3} η1_{2,3} ξ2_{2,3} ξ2_{3,3} + 2 e^{λ ξ2_{2,2}-λ ξ2_{3,3}} ϵ λ^3 η1_{2,3} η2_{1,3} ξ2_{2,3} ξ2_{3,3} +
    e^{2 λ ξ2_{1,1}-2 λ ξ2_{3,3}} ϵ λ^4 η1_{1,3}^2 ξ2_{1,2} ξ2_{2,3} ξ2_{3,3} + 2 e^{λ ξ2_{1,1}-λ ξ2_{3,3}} ϵ λ^4 η1_{1,3} η2_{1,3} ξ2_{1,2} ξ2_{2,3} ξ2_{3,3}))
```

Out[•]=

In[•]:=
```
Factor[Total@msol[[1 ;; 15, 2, 1, 1, 2]]]
```

Out[•]=

$Aborted

In[•]:=
```
s = 0; k = 0;
Do[
 s = ExpandDenominator@ExpandNumerator@Together[s + t];
 Echo[(++k) → Short[Numerator[s]] / Factor@Denominator[s]],
 {t, msol[[1 ;; 15, 2, 1, 1, 2]]}
]
```

» $1 \to \dfrac{-2\, e^{\lambda\,(\ll 1\gg)+\lambda\,(\ll 1\gg)}\,\eta 1_{2,3}\,\eta 2_{1,2} + \ll 7\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^2}$

» $2 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^3 + \ll 36\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3}$

» $3 \to -\dfrac{\ll 1\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^3}$

» $4 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^7 + \ll 1614\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $5 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^7 + \ll 2186\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $6 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^7 + \ll 2776\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $7 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^7 + \ll 3344\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $8 \to -\dfrac{\ll 1\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $9 \to \dfrac{-e^{\lambda\,(\xi 2_{2,2}-\xi 2_{3,3})}\,\lambda^2\,\eta 1_{2,3}\,\eta 2_{1,2}\,\xi 1_{1,1}^7 + \ll 3627\gg + e^{\lambda\,(\ll 1\gg)}\,\lambda^2\,\ll 4\gg\,\xi 2_{\ll 1\gg}^4}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $10 \to -\dfrac{\ll 1\gg}{(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4}$

» $11 \to -\left(\left(e^{-\lambda\,(-2\,\xi 2_{1,1}+\xi 2_{2,2}+\xi 2_{3,3})}\,\left(\ll 12\,240\gg + 4\,\ll 5\gg\,\xi 2_{\ll 1\gg}^4\right)\right) \Big/ \left((\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} - \xi 2_{1,1} + \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4\right)\right)$

» $12 \to -\left(\left(e^{-\lambda\,(\xi 1_{3,3}-\xi 2_{1,1}+\xi 2_{3,3})-\lambda\,(-2\,\xi 2_{1,1}+\xi 2_{2,2}+\xi 2_{3,3})}\,(\ll 28\,004\gg + 3\,\ll 7\gg\,\ll 1\gg)\right) \Big/ \left((\xi 1_{1,1} - \xi 1_{3,3})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} - \xi 2_{1,1} + \xi 2_{2,2})^3\,(\xi 1_{1,1} - \xi 1_{3,3} + \xi 2_{1,1} - \xi 2_{3,3})^4\right)\right)$

Out[•]=
```
$Aborted
```

In[•]:=
```
Table[Simplify@DSolve[c λ^k ℯ^(b λ) + a g[λ] + g'[λ] == 0 ∧ g[0] == 0, g[λ], λ], {k, 0, 5}]
```

Out[•]=

$$\left\{\left\{g[\lambda]\to\frac{c\left(e^{-a\lambda}-e^{b\lambda}\right)}{a+b}\right\}\right\},\ \left\{\left\{g[\lambda]\to-\frac{c\,e^{-a\lambda}\left(1+e^{(a+b)\lambda}\left(-1+a\lambda+b\lambda\right)\right)}{(a+b)^2}\right\}\right\},$$

$$\left\{\left\{g[\lambda]\to-\frac{c\,e^{-a\lambda}\left(-2+e^{(a+b)\lambda}\left(2-2b\lambda+a^2\lambda^2+b^2\lambda^2+2a\lambda\left(-1+b\lambda\right)\right)\right)}{(a+b)^3}\right\}\right\},$$

$$\left\{\left\{g[\lambda]\to-\frac{1}{(a+b)^4}c\,e^{-a\lambda}\left(6+e^{(a+b)\lambda}\left(-6+6b\lambda-3b^2\lambda^2+a^3\lambda^3+b^3\lambda^3+3a^2\lambda^2\left(-1+b\lambda\right)+3a\lambda\left(2-2b\lambda+b^2\lambda^2\right)\right)\right)\right\}\right\},$$

$$\left\{\left\{g[\lambda]\to-\frac{1}{(a+b)^5}c\,e^{-a\lambda}\left(-24+e^{(a+b)\lambda}\left(24-24b\lambda+12b^2\lambda^2-4b^3\lambda^3+a^4\lambda^4+b^4\lambda^4+4a^3\lambda^3\left(-1+b\lambda\right)+6a^2\lambda^2\left(2-2b\lambda+b^2\lambda^2\right)+4a\lambda\left(-6+6b\lambda-3b^2\lambda^2+b^3\lambda^3\right)\right)\right)\right\}\right\},$$

$$\left\{\left\{g[\lambda]\to-\frac{1}{(a+b)^6}c\,e^{-a\lambda}\left(120+e^{(a+b)\lambda}\left(-120+120b\lambda-60b^2\lambda^2+20b^3\lambda^3-5b^4\lambda^4+a^5\lambda^5+b^5\lambda^5+5a^4\lambda^4\left(-1+b\lambda\right)+10a^3\lambda^3\left(2-2b\lambda+b^2\lambda^2\right)+10a^2\lambda^2\left(-6+6b\lambda-3b^2\lambda^2+b^3\lambda^3\right)+5a\lambda\left(24-24b\lambda+12b^2\lambda^2-4b^3\lambda^3+b^4\lambda^4\right)\right)\right)\right\}\right\}$$

In[•]:=
```
DSolve[c λ^3 + a g[λ] + g'[λ] == 0 ∧ g[0] == 0, g[λ], λ]
```

Out[•]=

$$\left\{\left\{g[\lambda]\to-\frac{c\,e^{-a\lambda}\left(6-6e^{a\lambda}+6a\,e^{a\lambda}\lambda-3a^2e^{a\lambda}\lambda^2+a^3e^{a\lambda}\lambda^3\right)}{a^4}\right\}\right\}$$