

$$\Phi_s[2, 1] = \Phi_s[3, 1] = \Phi_s[3, 2] = 0;$$

$$\Phi_s[3, 1, 2] = 1/24; \Phi = \text{DKS}[3, \Phi_s];$$

SeriesSolve[Φ ,

$$(\Phi^{\sigma[3,2,1]} \equiv -\Phi) \wedge$$

$$(\Phi ** \Phi^{\sigma[1,23,4]} ** \Phi^{\sigma[2,3,4]} \equiv \Phi^{\sigma[12,3,4]} ** \Phi^{\sigma[1,2,34]})];$$

Φ (* Can raise degree to 10 *)

SeriesSolve::ArbitrarilySetting: In degree 3 arbitrarily setting $\{\Phi_s[3, 1, 1, 2] \rightarrow 0\}$.

SeriesSolve::ArbitrarilySetting: In degree 5 arbitrarily setting $\{\Phi_s[3, 1, 1, 1, 1, 2] \rightarrow 0\}$.

$$\text{DKS} \left[0, \frac{1}{24} \overline{\overline{t_{13} t_{23}}}, 0, -\frac{7 \overline{\overline{t_{13} t_{23} t_{23} t_{23}}}}{5760} + \frac{7 \overline{\overline{t_{13} t_{13} t_{23} t_{23}}}}{5760} - \frac{\overline{\overline{t_{13} t_{13} t_{13} t_{23}}}}{1440}, \right.$$

$$0, \frac{31 \overline{\overline{t_{13} t_{23} t_{23} t_{23} t_{23} t_{23}}}}{967680} - \frac{157 \overline{\overline{t_{13} t_{13} t_{23} t_{23} t_{13} t_{23}}}}{1935360} -$$

$$\frac{31 \overline{\overline{t_{13} t_{23} t_{13} t_{23} t_{23} t_{23}}}}{387072} - \frac{31 \overline{\overline{t_{13} t_{13} t_{13} t_{23} t_{23} t_{23} t_{23}}}}{483840} +$$

$$\frac{11 \overline{\overline{t_{13} t_{13} t_{13} t_{23} t_{13} t_{23}}}}{290304} + \frac{31 \overline{\overline{t_{13} t_{13} t_{23} t_{13} t_{23} t_{23}}}}{725760} + \frac{83 \overline{\overline{t_{13} t_{13} t_{13} t_{23} t_{23} t_{23}}}}{967680} -$$

$$\left. \frac{13 \overline{\overline{t_{13} t_{13} t_{13} t_{13} t_{23} t_{23}}}}{241920} + \frac{\overline{\overline{t_{13} t_{13} t_{13} t_{13} t_{13} t_{23}}}}{60480}, \dots \right]$$