

BCH[x, y] (* Can raise degree to 22 *)

$$\begin{aligned}
 \text{LS} & \left[\overline{x} + \overline{y}, \frac{\overline{xy}}{2}, \frac{1}{12} \overline{x \overline{xy}} + \frac{1}{12} \overline{\overline{xy} y}, \frac{1}{24} \overline{x \overline{\overline{xy} y}}, \right. \\
 & - \frac{1}{720} \overline{\overline{\overline{xx \overline{xy}}}} + \frac{1}{180} \overline{\overline{\overline{xx \overline{\overline{xy} y}}}} + \frac{1}{180} \overline{\overline{\overline{x \overline{\overline{xy} y} y}}} + \frac{1}{120} \overline{\overline{\overline{\overline{\overline{xy} \overline{\overline{xy} y}}}}} + \\
 & \frac{1}{360} \overline{\overline{\overline{\overline{\overline{x \overline{xy} \overline{xy}}}}} - \frac{1}{720} \overline{\overline{\overline{\overline{\overline{\overline{\overline{xy} y} y y}}}}} - \frac{\overline{\overline{\overline{\overline{\overline{\overline{xxx \overline{xy} y}}}}}}}{1440} + \frac{1}{360} \overline{\overline{\overline{\overline{\overline{xx \overline{\overline{xy} y} y}}} + \\
 & \left. \frac{1}{240} \overline{\overline{\overline{\overline{\overline{x \overline{xy} \overline{\overline{xy} y}}}}} + \frac{1}{720} \overline{\overline{\overline{\overline{\overline{x \overline{\overline{xy} \overline{\overline{xy}}}}} - \frac{\overline{\overline{\overline{\overline{\overline{\overline{x \overline{\overline{xy} y} y y}}}}}}}{1440}, \dots \right]
 \end{aligned}$$