

$$\begin{aligned}
\vec{\sigma}_1 \cdot \vec{q} \frac{1}{m_\pi^2 + q^2} \vec{\sigma}_2 \cdot \vec{q} &= \frac{1}{3} \frac{q^2}{m_\pi^2 + q^2} S_{12}(\hat{q}) + \frac{1}{3} \frac{q^2}{m_\pi^2 + q^2} \vec{\sigma}_1 \cdot \vec{\sigma}_2 \\
&= \frac{1}{3} \frac{q^2}{m_\pi^2 + q^2} S_{12}(\hat{q}) + \frac{1}{3} \left( \cancel{1} - \frac{m_\pi^2}{m_\pi^2 + q^2} \right) \vec{\sigma}_1 \cdot \vec{\sigma}_2
\end{aligned}$$