For 3-point connected Green funtion we get

$$\Gamma_3(G_2)^3 = -G_3 \tag{1}$$

Differentiating with respect to ϕ^c

$$\begin{aligned}
&\frac{\delta}{\delta\phi^c}\Gamma_3(G_2)^3 + \Gamma_3\frac{\delta(G_2)^3}{\delta J}\frac{\delta J}{\delta\phi^c} = \frac{\delta G_3}{\delta J}\frac{\delta J}{\delta\phi^c} \\
\implies\ &\Gamma_4(G_2)^3 + 3\Gamma_3(G_2)^2G_3(G_2)^{-1} = -G_4(G_2)^{-1} \\
\implies\ &\Gamma_4(G_2)^4 + 3\Gamma_3(G_2)^2G_3 = -G_4 \\
\implies\ &\Gamma_4(G_2)^4 - 3\Gamma_3(G_2)^2G_2\Gamma_3(G_2)^2 = -G_4 \qquad \text{[from eqn (1)]}
\end{aligned}$$

Digramatically will be