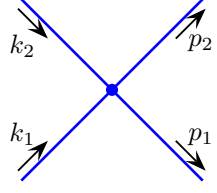
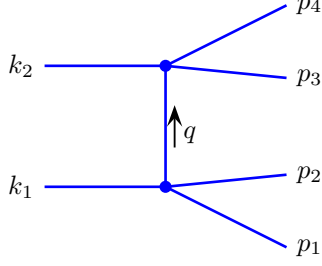


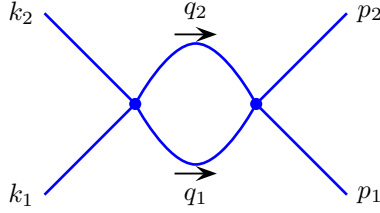
Examples of Feynman Rules



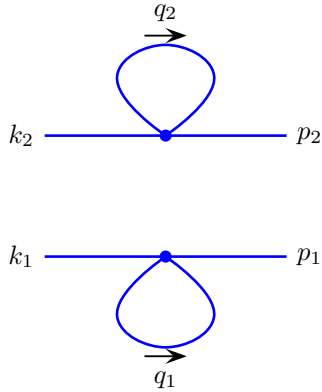
$$= (-i\lambda) \times (2\pi)^4 \delta^{(4)}(k_1 + k_2 - p_1 - p_2) \quad (1)$$



$$\begin{aligned} &= \int \frac{d^4 q}{(2\pi)^4} \frac{i}{q^2 - m^2 + i\epsilon} \times (-i\lambda)(2\pi)^4 \delta^{(4)}(k_1 - q - p_1 - p_2) \\ &\quad \times (-i\lambda)(2\pi)^4 \delta^{(4)}(k_2 + q - p_3 - p_4) \\ &= (2\pi)^4 \delta^{(4)}(k_1 + k_2 - p_1 - p_2 - p_3 - p_4) \times \frac{-i\lambda^2}{q^2 - m^2} \Big|_{q=k_1-p_1-p_2=p_3+p_4-k_2} \end{aligned} \quad (2)$$



$$\begin{aligned} &= \int \frac{d^4 q_1}{(2\pi)^4} \frac{i}{q_1^2 - m^2 + i\epsilon} \times \int \frac{d^4 q_2}{(2\pi)^4} \frac{i}{q_2^2 - m^2 + i\epsilon} \times \frac{1}{2} \\ &\quad \times (-i\lambda)(2\pi)^4 \delta^{(4)}(k_1 + k_2 - q_1 - q_2) \\ &\quad \times (-i\lambda)(2\pi)^4 \delta^{(4)}(q_1 + q_2 - p_1 - p_2) \\ &= (2\pi)^4 \delta^{(4)}(k_1 + k_2 - p_1 - p_2) \times \frac{\lambda^2}{2} \times \int \frac{d^4 q_1}{(2\pi)^4} \frac{1}{q_1^2 - m^2 + i\epsilon} \frac{1}{(k_1 + k_2 - q_1)^2 - m^2 + i\epsilon} \end{aligned} \quad (3)$$



$$\begin{aligned} &= \int \frac{d^4 q_1}{(2\pi)^4} \frac{i}{q_1^2 - m^2 + i\epsilon} \times \int \frac{d^4 q_2}{(2\pi)^4} \frac{i}{q_2^2 - m^2 + i\epsilon} \times \frac{1}{4} \\ &\quad \times (-i\lambda)(2\pi)^4 \delta^{(4)}(k_1 + q_1 - q_1 - p_1) \\ &\quad \times (-i\lambda)(2\pi)^4 \delta^{(4)}(k_2 + q_2 - q_2 - p_2) \\ &= (2\pi)^4 \delta^{(4)}(k_1 - p_1) \times (2\pi)^4 \delta^{(4)}(k_2 - p_2) \times \frac{\lambda^2}{4} \times \left[\int \frac{d^4 q}{(2\pi)^4} \frac{1}{q^2 - m^2 + i\epsilon} \right]^2 \end{aligned} \quad (4)$$