$$sin(2\pi n f_0 t) \cdot sin(2\pi m f_0 t) \circ\!\!-\!\!\bullet$$
$$\frac{1}{2j}(\delta(f - nf_0) - \delta(f + nf_0)) * \frac{1}{2j}(\delta(f - mf_0) - \delta(f + mf_0)) =$$
$$\frac{-1}{4}(\delta(f - nf_0) * \delta(f - mf_0) - \delta(f - nf_0) * \delta(f + mf_0)$$
$$-\delta(f + nf_0) * \delta(f - mf_0) + \delta(f + nf_0) * \delta(f + mf_0)) =$$
$$\frac{-1}{4}(\delta(f - (n+m)f_0) - \delta(f - (n-m)f_0) - \delta(f + (n-m)f_0) + \delta(f + (n+m)f_0))$$
$$\bullet\!\!-\!\!\circ \frac{1}{2}(cos(2\pi(n-m)f_0) - cos(2\pi(n+m)f_0)) \tag{1}$$

Nur für $n = m$ gibt es einen DC Anteil.