s(t) = [$A\_c$ + $A\_m$cos(2\(\pi\)$f\_m$t)] cos(2\(\pi\)$f\_c$t)

s(t) \(\times\) cos(2\(\pi\)$f\_c$t) = cos\(^2\)(2\(\pi\)$f\_c$t)[$A\_c$ + $A\_m$cos(2\(\pi\)$f\_m$t)]

= [$\frac{1}{2}$ + $\frac{1}{2}$cos(4\(\pi\)$f\_c$t)][$A\_c$ + $A\_m$cos(2\(\pi\)$f\_m$t)]

= $\frac{A\_c}{2}$ + $\frac{A\_c}{2}$cos(4\(\pi\)$f\_c$t) + $\frac{A\_m}{2}$cos(2\(\pi\)$f\_m$t) + $\frac{A\_m}{2}$cos(2\(\pi\)$f\_m$t)cos(4\(\pi\)$f\_c$t)

= $\frac{A\_c}{2}$ + $\frac{A\_m}{2}$cos(2\(\pi\)$f\_m$t)

= $\frac{A\_m}{2}$cos(2\(\pi\)$f\_m$t)