

This product does have terms that add to 0, but the result is not a real number. The factors would need to be conjugates to result in a real product such as 97. Using FOIL shows that this is not the number 97.

$$\begin{aligned}(4 + 9i)(9 + 4i) &= 4(9) + 4(4i) + (9i)(9) + (9i)(4i) = \\ &36 + 16i + 81i + 36i^2 \\ &= 36 + 97i + 36(-1) = 36 + 97i - 36 = 97i\end{aligned}$$