

You may have thought that multiplying a complex number by itself would result in a real number, but that only works if it is a purely imaginary number (real part equal to 0). Using FOIL shows that this is not the number 97.

$$\begin{aligned}(4 - 9i)(4 - 9i) &= (4)(4) + (4)(-9i) - (9i)(4) + (9i)(9i) = \\ &16 - 36i - 36i + 81i^2 \\ &= 16 - 72i + 81(-1) = -65 - 72i\end{aligned}$$