Solution (#190) Say $M = (x, y, z)$ which corresponds to $w_1 = (x + yi) / (1 - z)$. Then $-M$ corresponds to

$$w_2 = \frac{-x - yi}{1 + z}$$

and

$$\overline{w_1} w_2 = \frac{(x - yi)(-x - yi)}{(1 - z)(1 + z)} = \frac{-x^2 - y^2}{1 - z^2} = \frac{z^2 - 1}{1 - z^2} = -1.$$