

Simple Complex Homework #1 - MA221 - Rickert

Due for discussion: Exercises 1-6, Monday, September 3.

Let $z = 3 + 4i$, Let $M = \begin{pmatrix} z & i \\ -i & \bar{z} \end{pmatrix}$.

- 1 Determine the polar form of z .
- 2 Determine the polar form of \bar{z} .
- 3 Determine the polar form of z^2 .
- 4 Find a polynomial with real coefficients for which z is a root.
- 5 Plot a graph of $e^{-zt} + e^{-\bar{z}t}$.
- 6 If $f(t) = Ae^{2it} + Be^{-2it}$, $f(0) = 10$ and $f'(0) = 6$, express $f(t)$ in terms of real functions, real variables and real constants.

Coming Attractions:

- 7 What are the trace and determinant of M ?
- 8 What is M^2 ?
- 9 What are the trace and determinant of M^2 ?