

Categorising complex numbers

Think about pairs of complex numbers z and w and the three properties:

A: $z \times w$ is real

B: $z + z^* + w$ is imaginary

C: $|z| = |w|$

Can you find a pair of complex numbers which satisfies all three properties A, B and C?

If so write this pair in the central region where the three circles overlap.

How about a pair which doesn't satisfy any of the requirements?

Fill this in the region outside the three circles.

The task: To find one example for each of the other six regions.

Is it possible to find an example for every region?

