

Math 231. Honors Question 5.

The complex numbers revisited

1. Find all complex numbers  $z = x + iy$  for which  $z^6 = 1$ . First write them in the form  $z = re^{i\theta}$ , then in the form  $x + iy$  with  $x$  and  $y$  numbers (some of which will involve square roots). There are exactly 6 such numbers (you don't need to prove this).
2. Plot these numbers in the complex plane.
3. For any positive integer  $n$ , can you guess what the set of complex numbers satisfying the equation  $z^n = 1$  looks like in the complex plane?