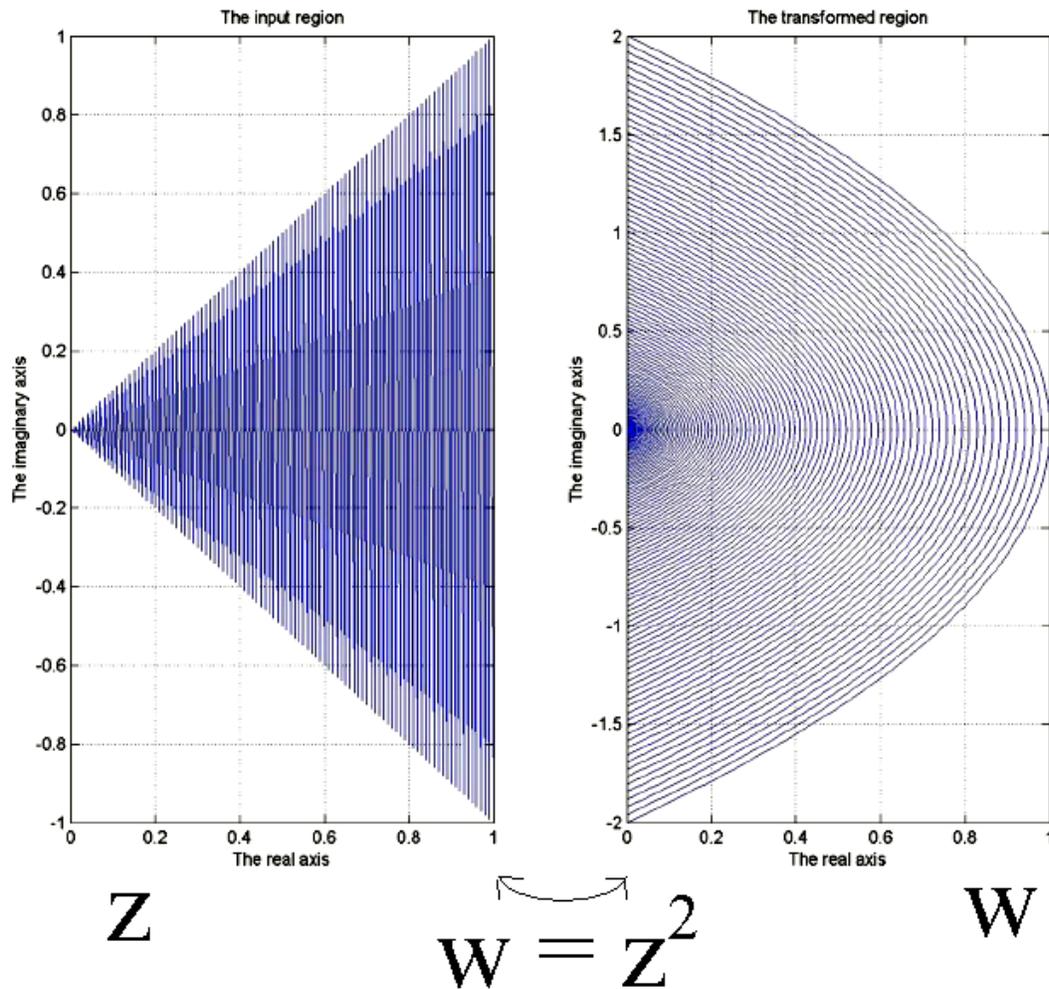


MATH 206 HW 4

1. Sketch the set of points determined by the equality $|z + i| = 2$ by using Matlab.
2. Find the roots of the polynomial $z^6 - z^4 + 2 = 0$ by using the 'roots' function of Matlab.
3. Write a Matlab function which demonstrates the below mapping:



4. Write a Matlab function that will find and plot all roots of the equation $z^n = z_0$ where n is an integer and $z_0 = r_0 e^{i\theta_0}$. Your program should take r_0 , θ_0 and n as inputs and give all the roots as an output in a vector. It should also plot all the roots on the circle that contains the roots. So your function definition in Matlab should be something like this:

function myroots = rootplot(r0,theta0,n). Here **myroots** is the output vector which contains all of the roots and **rootplot** is the name of the function. By using your function, find and plot the roots of the following equations:

a) $z^8 = 1+i$ **b)** $z^{10} = 1+\sqrt{3}i$ **c)** $z^{20} = \sqrt{2} + \sqrt{2}i$ **d)** $z^{15} = 1+3i$

Note: Your plot should be something like this:

