

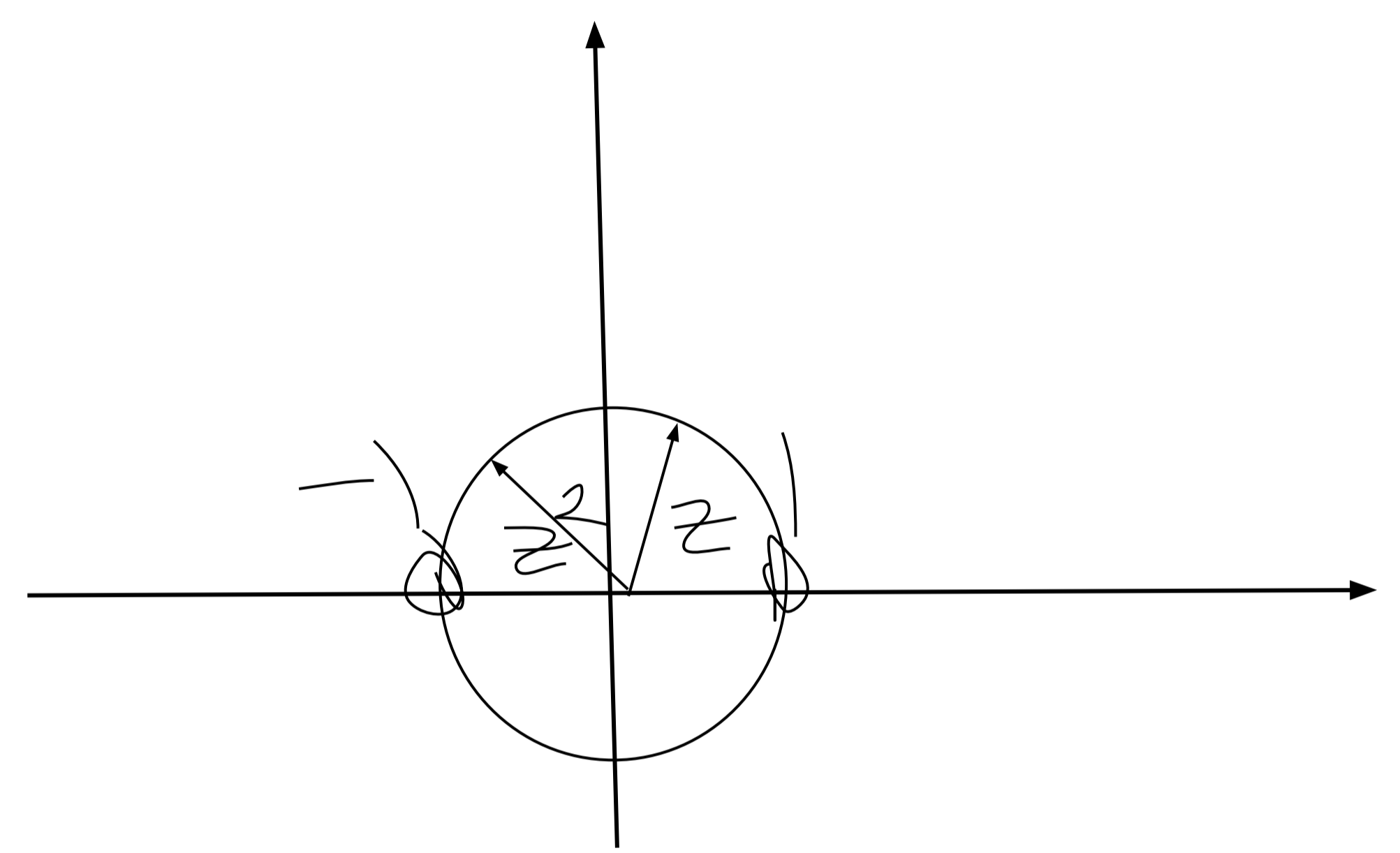
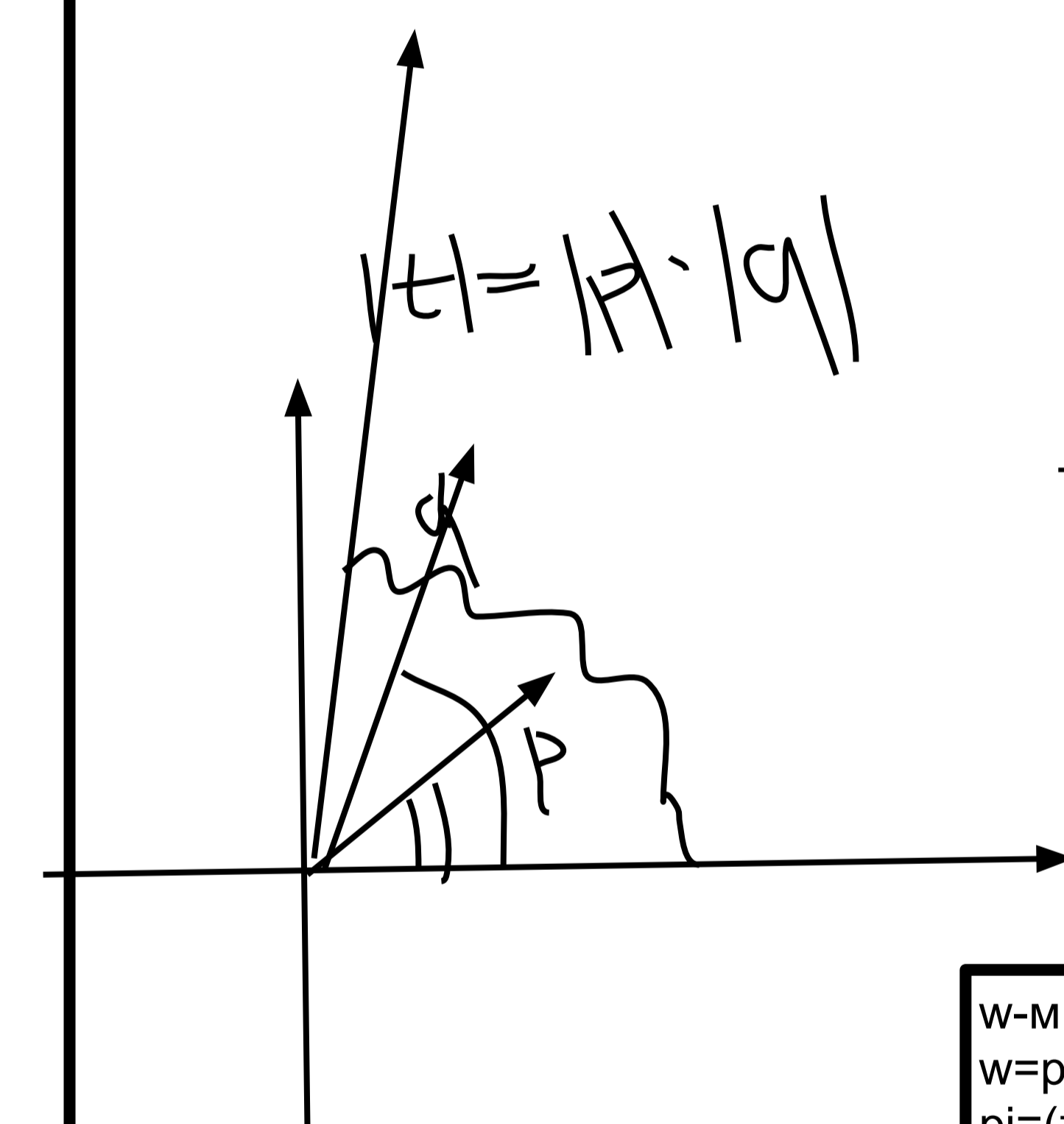
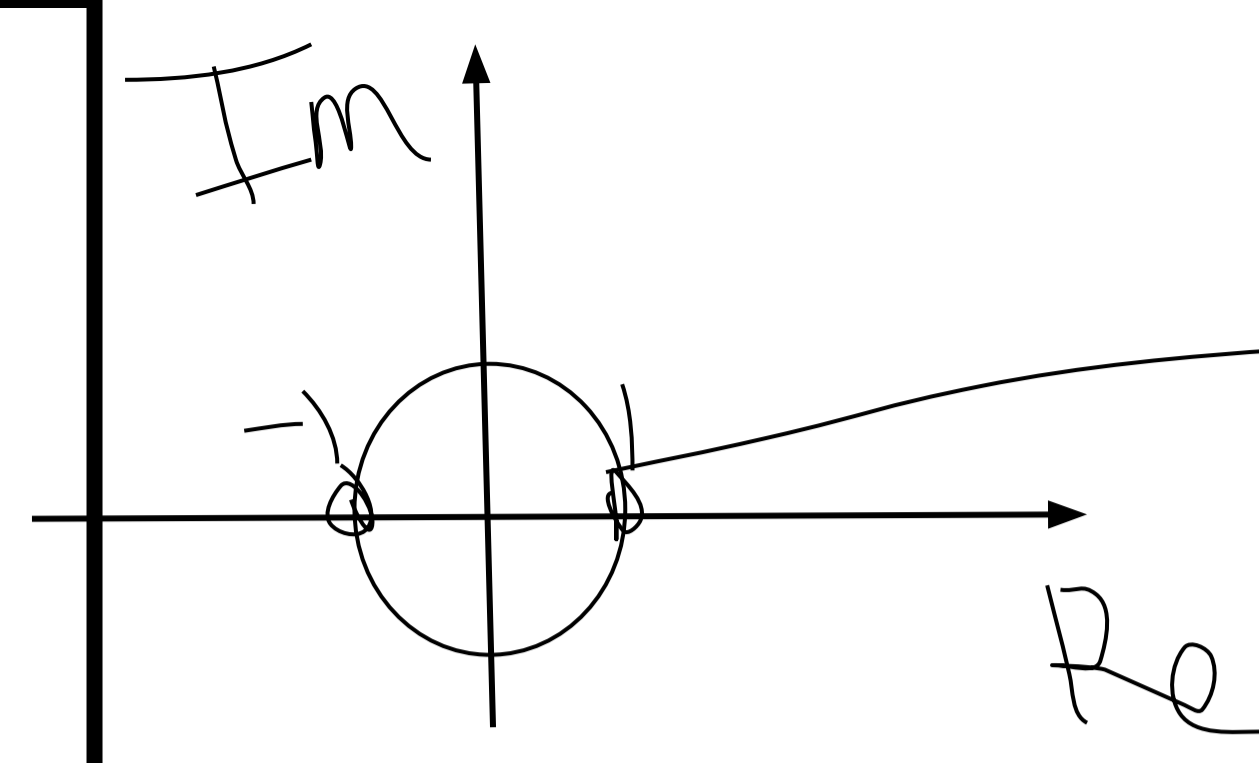
$w = (z+1)/(z-1)$
 $z \neq \pm 1$
 задача
 ДОКТЬ ЧТ w-мнимое $\Leftrightarrow |z|=1$

 w -мнимое $\Leftrightarrow |z|=1$
 $z = a+bi$
 $|z| = \sqrt{a^2+b^2}$
 $|z|=1$
 $z = \frac{a}{|z|} + \frac{b}{|z|}i$
 $a^2+b^2=1$

 $w = (z+1)(z+1)/(z-1)(z+1) =$
 $= (z^2+2z+1)/(z^2-1)$

 $w = (z+1)/(z-1)$
 $t = z-1 = a+bi - 1 = (a-1)+bi$
 $t' = z'-1 = a-bi - 1 = (a-1)-bi$

 $w = [(z+1)(z'-1)]/[(z-1)(z'-1)] =$
 $= (zz'+z-z'-1)/(z'z-z-z'+1) =$
 $= (1+z-z'-1)/(1-z-z'+1) =$
 $= (z-z')/(-z-z'+2) =$
 $= (a+bi-a+bi)/(-a-bi-a+bi+2) =$
 $= 2bi/2(1-a) = bi/(1-a)$



$z = a+bi$
 $z = a-bi$
 $z*z' = a^2+abi-abi-b^2*i^2 = a^2+b^2 = |z|^2 = 1$

w -мнимое $\Rightarrow |z|=1$
 $w = pi$
 $pi = (z+1)/(z-1) = (zz'+z-z'-1)/(z'z-z-z'+1) =$
 $= (|z|^2+z-z'-1)/(|z|^2-z-z'+1) =$
 $= (|z|^2+a+bi-a+bi-1)/(|z|^2-a-bi-a+bi+1) =$
 $= (|z|^2+2bi-1)/(|z|^2-2a+1)$

 $0+pi = (|z|^2-1)/(|z|^2-2a+1) + (2b)/(|z|^2-2a+1) * i$
 $0 = |z|^2-1$
 $|z|^2 = 1$
 $|z| = 1$