Problem 1. Given $w \in \mathbb{C}$, find $z \in \mathbb{C}$ such that $\sin z = w$.

Solution.

$$\sin z = w$$

If we consider suppose it does work, then z = log(something). But now you need to prove that sin(log(something)). Because you are assuming you have a solution. Also, when working with $\sqrt{1-w^2}$ just write a remark that there are two possible square roots. □

1 Infinite Series of Complex Numbers