

Section 1.4: 3, 8, 15, 16

Section 2.1: 4, 5, 7, 14

Additional problem.

Let $\arg_{(-\pi, \pi]}(z)$ be the principal branch of $\arg(z)$, which takes values in $(-\pi, \pi]$. Let \sqrt{w} be the corresponding branch of the square root:

$$\sqrt{w} = |w|^{\frac{1}{2}} e^{\frac{i}{2} \arg_{(-\pi, \pi]}(w)}.$$

Find the set of z where $\sqrt{z^2 + 1}$ is discontinuous.