Exercise 1. Let $\log w$ denote the branch of the logarithm with $\arg w \in (0, 2\pi]$ and let $w^{1/2} = e^{\frac{1}{2}\log w}$. Where is $(z^2 + 4)^2$ continuous? What about $(z^2 - 1)^{1/2}$?

Exercise 2. Show that $f(z) = |z|^2$ is differentiable only at $z_0 = 0$. [*Suggestion:* For $z_0 \neq 0$, use the fact that $g(z) = z$ *is* differentiable but that $h(z) = \overline{z}$ is *not.*]

Exercise 3. 1.5.7