Problems from the book:

**Sec. 4.** (p. 47): 2, 5

Additional problems:

**A1.** Let $f(z)$ and $g(z)$ be two complex functions. Suppose that the Cauchy-Riemann (CR) equations hold for $f(z)$ and $g(z)$ at a point $p$. Show that the CR equations also hold for $f(z)g(z)$ at $p$.

**A2.** Let $f(z)$ be an entire function. Suppose that $f(z)$ is also entire. Show that $f(z)$ must be constant on $\mathbb{C}$.

**A3.** We fix a branch of $\text{arg}(z)$ by requiring $\pi/2 \leq \text{arg}(z) < 5\pi/2$. Find
(a) $\log(1-j)$
(b) $\sqrt{1-j}$
(c) $(1-j)^\pi$