COMPLEX ANALYSIS, HW # 5

Chapter 4, problems 11, 13, 15, 16, 17 (a)-(d), 21, and this problem:

Problem 1.

Let $p \in \mathbb{N}$. Show that the function $\frac{\sin z}{z^p}$ has an antiderivative in $\mathbb{C}\backslash\{0\}$ if and only if p is odd.