Math 428 Homework 2 Winter 2020 **Due Friday, January 24**

Section 4.2: 2, 3, 6

Section 4.3: 4, 5, 6

Additional problems:

1. Suppose that f(z) is analytic on the set $A = \{z : 1 < |z| < 2\}$, and let $f(z) = \sum_{k=-\infty}^{\infty} a_k z^k$ be its Laurent expansion on A. Show that if γ is any closed path contained in A, then

$$\int_{\gamma} f(z) \, dz = 2\pi i \cdot \operatorname{ind}_{\gamma}(0) \, a_{-1}.$$