Homework 9
Due: Friday, October 26


2. [BC] 41.2.

3. [BC] 43.1, 43.2.

4. (a) Let $P(z)$ be a polynomial, and let $C$ be any closed contour. Prove that $\int_C P(z) \, dz = 0$.

(b) Let $f$ be a function defined on a domain $D$, and let $C \subset D$ be a closed contour. Suppose you know that for every $\epsilon > 0$ there exists some polynomial $P_\epsilon(z)$ such that, for every point $z$ on the contour $C$, $|f(z) - P_\epsilon(z)| < \epsilon$.
Prove that $\int_C f(z) \, dz = 0$.

5. [BC] 43.4.