Homework 9 Due: Friday, October 26

1. [BC] 41.1.

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.

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