

Homework assigned Monday, February 20.

Compute the following complex integrals.

- (1) $\int_{\gamma} z^2 dz$ where γ is the straight line segment from i to 1 . *Hint:* This segment is parametrized by $z = (1 - t)i + t$ with $0 \leq t \leq 1$.
- (2) $\int_{\gamma} \bar{z} dz$ where γ is the curve parametrized by $z = 6t - 6ti$ with $-1 \leq t \leq 2$.
- (3) $\int_{\gamma} \frac{dz}{z}$ where γ is the circle parametrized by $z = r \cos(t) + ir \sin(t)$ where $r > 0$ is constant.
- (4) $\int_{\gamma} \sin(z) dz$ where γ is the part of the real axis between 0 and π .