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 $0 \le t \le 1$.

(2) $\int_\gamma \overline{z}\,dz$ where γ is the curve parametrized by $z = 6t - 6ti$ with $-1 \le t \le 2$.

(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.