# Higher Mathematics in English II
# Exercises IV:
# Complex Integration

Dr Nicholas Sedlmayr

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1. Calculate the integral
$$\int_L \bar{z}\,\mathrm{d}z$$
where $L$ is the boundary of the triangle with vertices at 0, 1, and i.

2. find the residue of
$$f(z) = \frac{\pi\cot(\pi z)}{z^2}$$
at $z = 0$.

3. Calculate the integral
$$\int_C \mathrm{d}z \frac{z^3}{z^2+5z+6}$$
where $C$ is the init circle $|z|$.

4. Calculate the integral
$$\int_{-\infty}^{\infty} \frac{\mathrm{d}z}{z-\mathrm{i}}\,.$$

5. Calculate the integral
$$\int_{-\infty}^{\infty} \mathrm{d}z \frac{\cosh z}{z^2+1}\,.$$

6. Find
$$\int_C \frac{\mathrm{d}z}{z^4+z^3-2z^2}$$
where $C$ is the circle $|z| = 3$.