# MATH 3851 Homework Assignment 7 (due Monday, March 1st)

Textbook problems:

Section 39: (p. 125-126) 5
Section 45: (p. 149) 2(a,c)
Section 49: (p. 160-163) 1(c,f), 2(c)
Section 52: (p. 170-171) 1(b,c), 2(a,b), 5

Extra problems:

• Give an example of a contour $\Gamma$ (with parametrization) for which $\int_\Gamma \frac{1}{z}\, dz = -3\pi i$.

• Give a deformation function which shows that $\Gamma_0$ is continuously deformable to $\Gamma_1$ in $\mathbb{C}$, where $\Gamma_0$ is the circle $\{z : |z+1| = 4\}$ traversed in the counterclockwise direction, and $\Gamma_1$ is the circle $\{z : |z-1| = 2\}$ traversed in the counterclockwise direction. (HINT: The easiest way is probably to shrink the radius from 4 to 2 first (say from $s = 0$ to $s = \frac{1}{2}$), and then to move the circle from being centered at $-1$ to centered at 1 (say from $s = \frac{1}{2}$ to $s = 1$.)