

Mth 611 Assignment 4 | Name:

Bent Petersen 611s2005-004.tex Due date: Mon April 30, 2005 17:10

Instructions: Please supply your solution(s) by the due date in the space provided below. Continue on to the back of the sheet if you need more space. Do not turn in any additional paper. For additional comments and instructions check my webpage <http://oregonstate.edu/~peterseb>

Problem 4.1 Let $a > 0$ and $b > 0$. Try first to evaluate the integral

$$\int_0^{2\pi} \frac{dt}{a^2 \cos^2 t + b^2 \sin^2 t}$$

using just real methods - just for fun. It can be done. Next consider

$$\gamma(t) = a \cos(t) + ib \sin(t), \quad 0 \leq t \leq 2\pi.$$

Evaluate the winding number about the origin of γ and use your result to compute the integral. (Write up the winding number calculation of the integral).