

MATB42: Assignment #6

1. Let  $\omega = \frac{-y}{x^2 + y^2} dx + \frac{x}{x^2 + y^2} dy$ . Calculate  $\int_{\gamma} \omega$  where

(a)  $\gamma$  is the boundary of the triangle with vertices (in order) (0,1), (2,3) and (2,1).

(b)  $\gamma$  is the boundary curve of the region  $\left\{ (x, y) \in \mathbb{R}^2 \left| \frac{(x-2)^2}{9} + \frac{(y+1)^2}{4} \leq 1 \right. \right\}$