

## MA3402 HOMEWORK 5

Homeworks are intended as quick exercises to help solidify key ideas from the previous week. If you are spending a long time on them, stop and talk it over with someone.

### 1. FOR THURSDAY 5 OCTOBER 2023

- (1) Prove Propositions 1.33 (17.10) and 1.34 (17.11) from lectures (aka Exercise 8 from Exercise Sheet 2).
- (2) Let  $h: \mathbb{R} \rightarrow S^1 \subset \mathbb{R}^2$  be given by  $h(t) = (\cos t, \sin t) = (x, y)$ . Let  $\omega$  be the 1-form  $-ydx + xdy$  on  $S^1$ . Compute  $h^*(\omega)$ .
- (3) Start looking at Exercise Sheet 2.