Exercise Set 6 – Vector Calculus, Frank Thorne (thorne@math.sc.edu)

Due Monday, April 13, 2020

(1) Let D be any rectangle in the plane, whose edges are parallel to the x and y axes. In class, we proved that

$$\oint_{\partial D} x\,dy = \text{Area}(D).$$

Similarly prove that

$$\oint_{\partial D} -y\,dx = \text{Area}(D).$$

What special case of Green's Theorem does this prove?

(2) Ch. 6.2, 6, 7, 10, 18, 22.

(3) Ch. 6.3, 3, 4, 14, 19, 25.

(4) **Extra credit** (1 point): 6.2, 24.