Homework 2 for Math 140C - Spring 2018

(I) Ch 9, problems 7, 8, 9, 10

(II) For $t > 0$, consider the function

$$\begin{aligned} f: \quad & \mathbb{R}^2 \to \mathbb{R}^2 \\ & (x, y) \mapsto \left(\frac{\cos(x) + \sin(y)}{t}, \frac{\sin(x) - \cos(y)}{t} \right). \end{aligned}$$

(a) Find an upper bound for $\|f'(x, y)\|$.

(b) Show that for $t > \sqrt{2}$, f has a fixed point.