

## Exam type problems for homework sets 3 and 4

(not to be handed in, obviously)

**Set 3:** (possibly as part of some other problem)

Find a parameterization for the ellipsoid in  $\mathbb{R}^3$  with equation

$$\left(\frac{x-x_0}{a}\right)^2 + \left(\frac{y-y_0}{b}\right)^2 + \left(\frac{z-z_0}{c}\right)^2 = 1, \quad a, b, c > 0.$$

**Set 4:** Let  $f : \mathbb{R}^2 \rightarrow \mathbb{R}$  be differentiable. Show that

$$\frac{d}{dt}f(t, e^t - 1)|_{t=0} = \frac{d}{dt}f(e^t - 1, t)|_{t=0}.$$