Homework #6 **Deadline: May 7, 2019, 13:10.**

1. Using the balance of mass, compute the material time derivative of gradient of density, i.e.
$$\frac{\mathrm{d}}{\mathrm{d}t}(\nabla \varrho).$$

2. Assuming that $\mathbf{F}_{\kappa_{p(t)}}$ transforms under the change of transformer in the same way as the deformation gradient $\mathbf{F}$, decide whether the following dissipations ξ are objective:

   (i) $\xi = \mathbf{D}_{\kappa_{p(t)}}\mathbf{B}_{\kappa_{p(t)}} \cdot \mathbf{D}_{\kappa_{p(t)}}$

   (ii) $\xi = \mathbf{D}_{\kappa_{p(t)}}\mathbf{C}_{\kappa_{p(t)}} \cdot \mathbf{D}_{\kappa_{p(t)}}$