

## Practice: Tube under internal pressure

Let us consider a circular tube with height  $h$ , and internal radius  $r$ , and thickness  $e$ . The tube is imposed to internal pressure  $p$  (see Fig. 1). Note that gravity and atmospheric pressure are neglected.



Figure 1: Circular tube under internal pressure

**Question 1:** Please verify that a static solution exist! Assume that  $\underline{\underline{\sigma}}$  only depends on  $r$  (the polar radius)

**Question 2:** Find all the local equations satisfied by  $\underline{\underline{\sigma}}(r)$  that define the static admissibility? Prove that  $\sigma_{r\theta} = 0$  with the assumption  $\underline{\underline{\sigma}}(r)$ ?