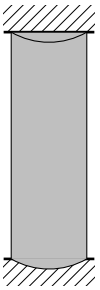
Name:

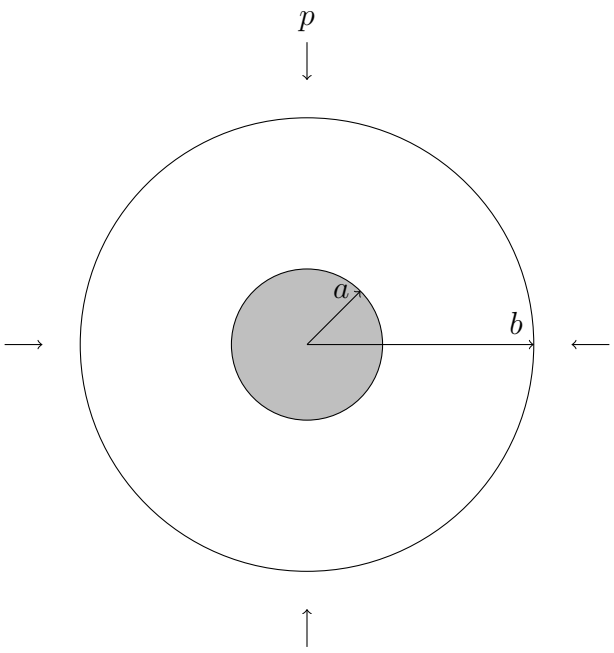
Exam 2

1. (30 pts.) Find the stress and strain fields for an isotropic cylinder with material properties α, E, and ν constrained in the z-direction and subjected to some change in temperature, ΔT.



2. (40 pts.) Find the stress field and displacements (in terms of the material constants, λ and μ) for a baseball with $r_o = b$ and some external pressure, p (assume the rubber core of $r_i = a$ is incompressible). **Note:** The Navier equations for an axisymmetric sphere reduce to

$$\frac{\partial}{\partial r}\left[\frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2 u_r\right)\right] = 0$$



3. (30 pts.) Find the stress field and displacements for a block under self-weight as shown.