Ground rules:
- Open book
- Closed notes
- You may consult one page (both sides) of handwritten notes
- Write your answer directly on this sheet (continue onto back if necessary)

Problem.
Two infinitely long cylindrical shells are aligned with their centers on the \( z \) axis, with radii \( a \) and \( b \), as shown. The shells at \( s = a \) and \( s = b \) carry uniform surface charge densities per unit area of \(-\sigma_0\) and \(+\sigma_0\) respectively.
(a) Is the electric field zero for \( s < a \) (inside both shells)?
If not, find it (magnitude and direction).
(b) Is the electric field zero for \( s > b \) (outside both shells)?
If not, find it (magnitude and direction).