Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assignment 5 (4p)**

Derive the component forms of the membrane equilibrium equations  in the cylindrical shell -coordinate system. Use the stress resultant, external force, and gradient representations

, , .

The non-zero basis vector derivatives are  and .

**Answer** 