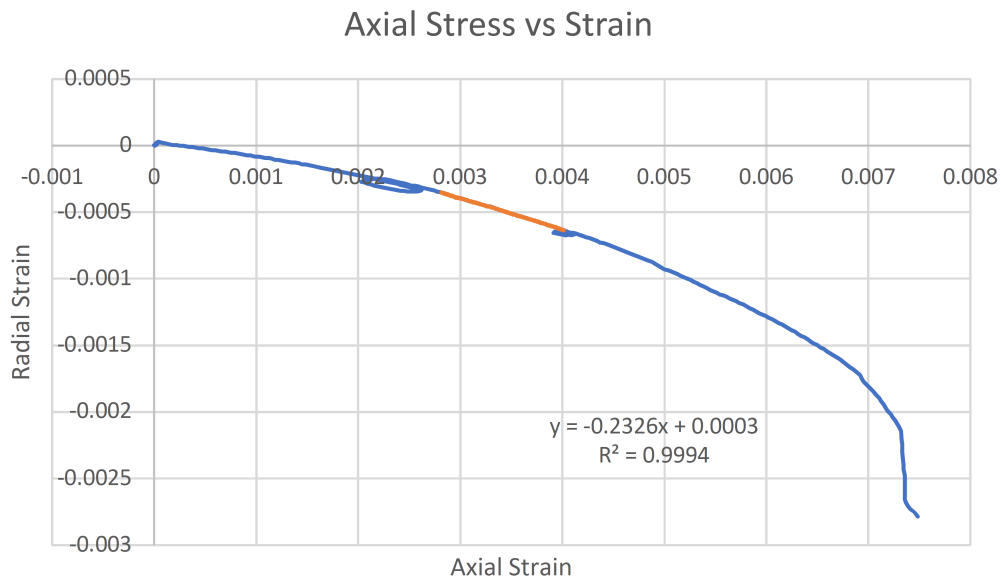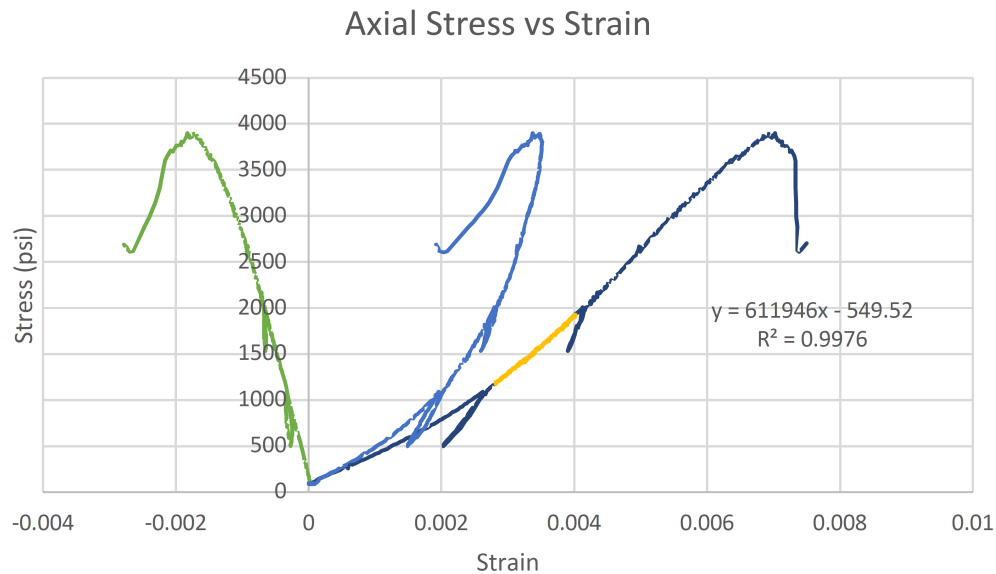# Homework 3

Problem 1

An axial deviatoric test was performed in an organic-rich Mancos shale sample. The sample was cored in the direction of bedding. The sample diameter was $D = 1.00$ in and the sample length was $L = 2.01$ in. The test was conducted in "as received conditions". The data is available here. The data contains Time (s), Axial Force (lb), axial displacement (in), and radial displacement (in).

- plot of axial stress versus axial strain and axial stress versus axial strain.

Axial Stress vs Strain

$y = 611946x - 549.52$
$R^2 = 0.9976$

(Stress (psi) vs Strain)

Axial Stress vs Strain

$y = -0.2326x + 0.0003$
$R^2 = 0.9994$

(Radial Strain vs Axial Strain)

Young's Modulus	E = 611946 psi
Poisson's Ratio	$\nu = 0.23$

Problem 2

- Draw the normal and shear stresses defined as positive on the four sides of the following square solid element according to the given 2D coordinate system.