#Jenny

Finally I get this ebook, thanks for all these I can get now!

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Cool! I'am really happy

#Markus Jensen

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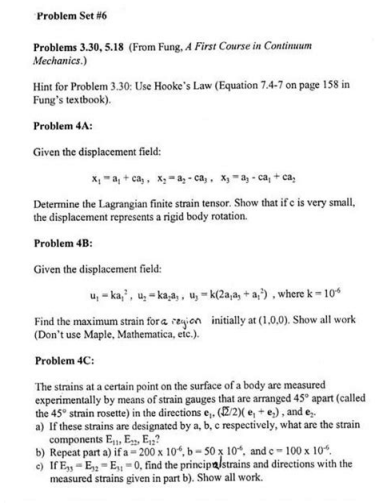
My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler

so many fake sites. this is the first one which worked! Many thanks



Problem Set #6

Problems 3.30, 5.18 (From Fung, *A First Course in Continuum Mechanics*.)

Hint for Problem 3.30: Use Hooke's Law (Equation 7.4-7 on page 158 in Fung's textbook).

Problem 4A:

Given the displacement field:

$$x_1 = a_1 + ca_3\,,\quad x_2 = a_2 - ca_3\,,\quad x_3 = a_3 - ca_1 + ca_2$$

Determine the Lagrangian finite strain tensor. Show that if c is very small, the displacement represents a rigid body rotation.

Problem 4B:

Given the displacement field:

$$u_1 = ka_1^2\,,\quad u_2 = ka_2a_3\,,\quad u_3 = k(2a_1a_3 + a_1^2)\,,\ \text{where } k = 10^{-6}$$

Find the maximum strain for a [illegible] initially at (1,0,0). Show all work (Don't use Maple, Mathematica, etc.).

Problem 4C:

The strains at a certain point on the surface of a body are measured experimentally by means of strain gauges that are arranged 45° apart (called the 45° strain rosette) in the directions $\mathbf{e}_1$, $(\sqrt{2}/2)(\mathbf{e}_1 + \mathbf{e}_2)$, and $\mathbf{e}_2$.

a) If these strains are designated by a, b, c respectively, what are the strain components E_{11}, E_{22}, E_{12}?
b) Repeat part a) if $a = 200 \times 10^{-6}$, $b = 50 \times 10^{-6}$, and $c = 100 \times 10^{-6}$.
c) If $E_{33} = E_{23} = E_{31} = 0$, find the principal strains and directions with the measured strains given in part b). Show all work.