SDSU ME314: homework 3.

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April 20, 2015

1 Due date

Due Tue Apr 28 at 11:59pm turned in to blackboard Turn it in link.

2 Questions

1. Define the concept of strain.
2. Define Poissons ratio.
3. Write the equations for strain due to uniaxial loading, biaxial loading, and triaxial loading. Draw the element associated with the variables. Explain in your own words what each term means in the equation.
4. Use Castiglianos energy method to determine the solution to the problem described in 4.84 in the book: A simply supported steel beam of length l with a concentrated load F acting at midspan has a rectangular cross-section of width b, and depth h. If the strain energy due to transverse shear loading is U_s and that due to bending loading is U_b, derive an expression for the ratio U_s/U_b and plot it as a function of h/l over the range 0.0-0.10