

## MET 301: Homework#7

- Read section 1-22, page 76 in the textbook before solving Problems 1 and 2 below. Useful formulae are 52, 53, 54 and 55.
  - Review Example 3-1, page 189, before solving problem #3 in this homework.
1. When free of loads, a steel plate is 500 mm long in the x direction and 300 mm long in the y direction. After the loads are applied, the 500 mm length becomes 500.2 mm, and 300 mm length becomes 299.7 mm. Find the values of normal stresses  $\sigma_x$  and  $\sigma_y$ . Given,  $E = 200,000$  MPa, and  $\mu = 0.3$ .
  2. When free of loads, a steel plate is 375 mm long in the x direction and 300 mm long in the y direction. After the loads are applied, 300 mm length becomes 300.15. Find the value of  $\sigma_y$  if  $\sigma_x = 133.33$  MPa. Given,  $E = 200,000$  MPa, and  $\mu = 0.3$ .  
*Ans.*  $\sigma_y = 140$  MPa
  3. Chapter 3, page 238 Problem 8.