

## Problem Set Four

1. Design an aluminum plate to span a rectangular opening 3 ft by 6 ft and carry a central point load of 300 lbs. The maximum plate deflection is to be  $1/4$  in. Assume that the plate is simply supported. Do not neglect the weight of the plate. Assess your solution for the validity of the plate approximation.
2. What is the maximum tensile stress in the plate you have designed? Where in the plate is it?
3. Design an equivalent steel plate. Which plate is heavier, and which plate has the higher material cost? (Use current commodities prices to estimate the relative prices of aluminum and steel if you don't have easy access to this information, or cite the source you do use.)