

ENGR 240  
Homework # 13  
Due: Friday, March 30, 2001

1. An aluminum alloy (7075-T651) has properties shown in Table 8.1. In both parts a and b, take the geometric factor,  $Y$ , to be = 1.
  - a) Calculate the size of a surface crack that would lead to catastrophic brittle failure at an applied stress of  $1/2$  of the yield strength. Report answer in mm.
  - b) If a part is designed from this alloy, what maximum crack length can be tolerated so that you would expect to encounter yielding (as opposed to brittle failure) as an increased load is applied?
  
2. Text: Problem 8.26