AE737 Spring 2016

Name:

Homework 6
Due 29 Mar 2016

1. Plot the fatigue data given in hw6_data.txt and, using the data, find σ'_f and b.

2. Use the data and results from problem 1 to estimate the S-N curve for an identical specimen loaded with a mean stress of 30 ksi.

3. The following state of constant amplitude fatigue stress is applied to an un-notched specimen of 2024-T4 aluminum

$$\sigma_x = 27 \text{ ksi}$$
$$\sigma_y = 13 \text{ ksi}$$
$$\tau_{xy} = 8 \text{ ksi}$$

Predict the number of cycles before failure.