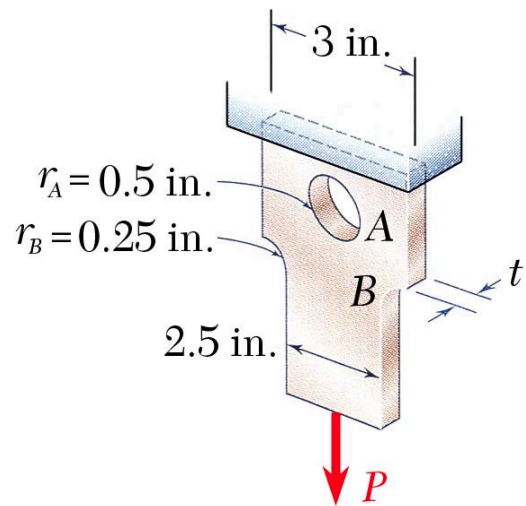


MEEG 3013 [Quiz #2.m07.101](#)

Open book, closed notes

1. A plate with a circular hole and two fillets is shown. For $P = 10$ kips and taking stress concentrations into account, determine the minimum plate thickness t required if the allowable stress is 15 ksi. ⑨

2. How many hours/week *outside the class* should you reserve for the reading, doing homework, or getting needed help in this course? ①



1. $K = \sigma_{\max} / \sigma_{\text{ave}}$ ① $\sigma_{\max} = \sigma_{\text{all}} = 15 \text{ ksi}$ ①

At circular hole: $r_A / d_A = 0.5 / 2 = 0.25$

$\therefore K = 2.44$ $2.44 = \frac{15}{10 / (2t)}$ $t = 0.813 \text{ in.}$ ③

At fillets: $r_B / d_B = 0.25 / 2.5 = 0.1$ $D / d_B = 3 / 2.5 = 1.2$

$\therefore K = 1.90$ $1.90 = \frac{15}{10 / (2.5t)}$ $t = 0.5067 \text{ in.}$ ③

Choose the larger of the two as the answer: $t = 0.813 \text{ in.}$ ①