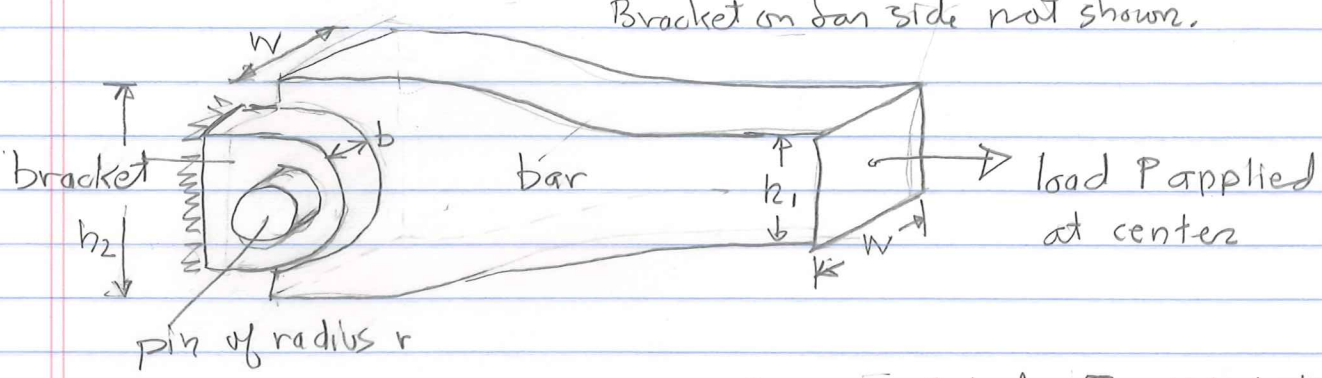
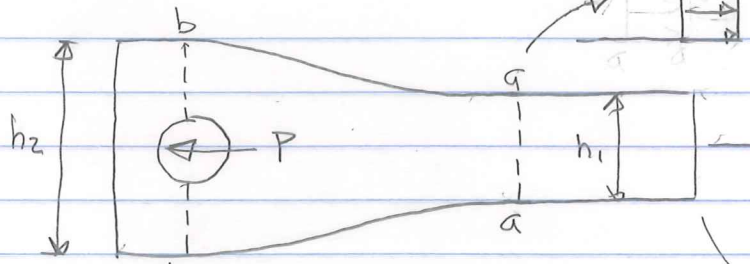
2. Example stress distribution: bar under tension supported by a pin

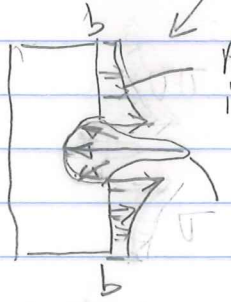


FBD of bar



Actual σ distribution in bar at section away from end (nearly uniform)

Average stress is $\sigma_{av} = \frac{P}{wh_1}$

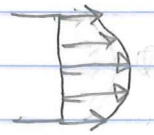


Actual σ distribution in bar. $\sigma_{av} = P/(h_2 - 2r)w$

Actual σ distribution on bar at hole from bearing by pin (compressive)

Average bearing stress $= \sigma_{b,av} = P/2wr$ (uses projected area)

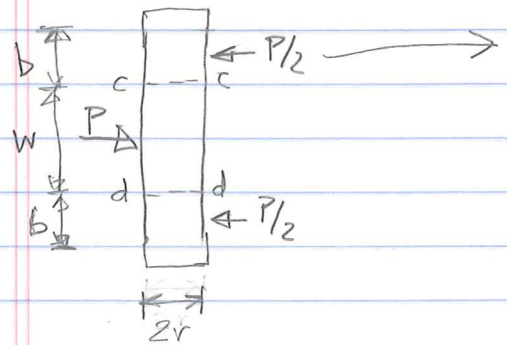
Could also be some shear stresses (small)



Actual σ distribution on end of bar from P

Average stress is $\sigma_{av} = P/wh_1$

FBD of pin



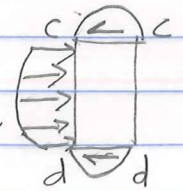
Actual σ distribution on pin due to bearing from bracket.

$\sigma_{b,av} = \frac{P}{2} / 2br = \frac{P}{4br}$

(uses projected area)

Actual σ distribution in pin

$\sigma_{av} = \frac{P}{2} / \pi r^2 = P/2\pi r^2$



Actual σ distribution on pin
due to bearing from bracket

$\sigma_{b,av} = P/2wr$ (uses projected area)

Where might you find high shear stresses in the bar?