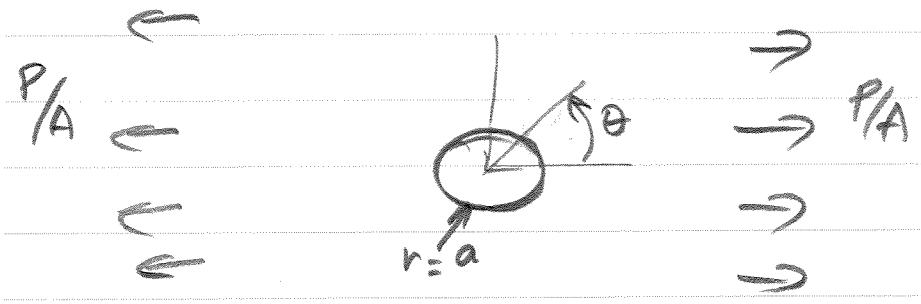
HW Stresses near holes

For the plate with hole under tension

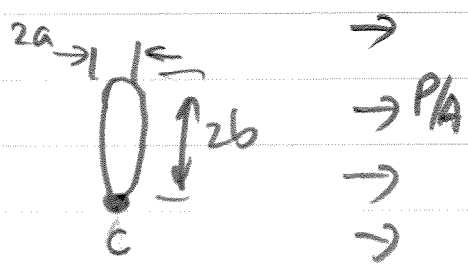


① We have seen that $\sigma_\theta\Big|_{\substack{r=a \\ \theta=\frac{\pi}{2}}} = 3\,P/A$ and $\sigma_\theta\Big|_{\substack{\theta=\frac{\pi}{2} \\ r\to\infty}} = P/A$.

At what value r on the line $\theta = \frac{\pi}{2}$ is $\sigma_\theta = 2\,P/A$?

② At what value θ on the hole surface is $\sigma_\theta = 2\,P/A$?

③ For an elliptical hole with major and minor axes b, a aligned with load it is found that σ_x at location C is $\sigma_x = \frac{P}{A}\left(1 + 2\frac{b}{a}\right)$



what is b/a if the stress concentration factor is 10?