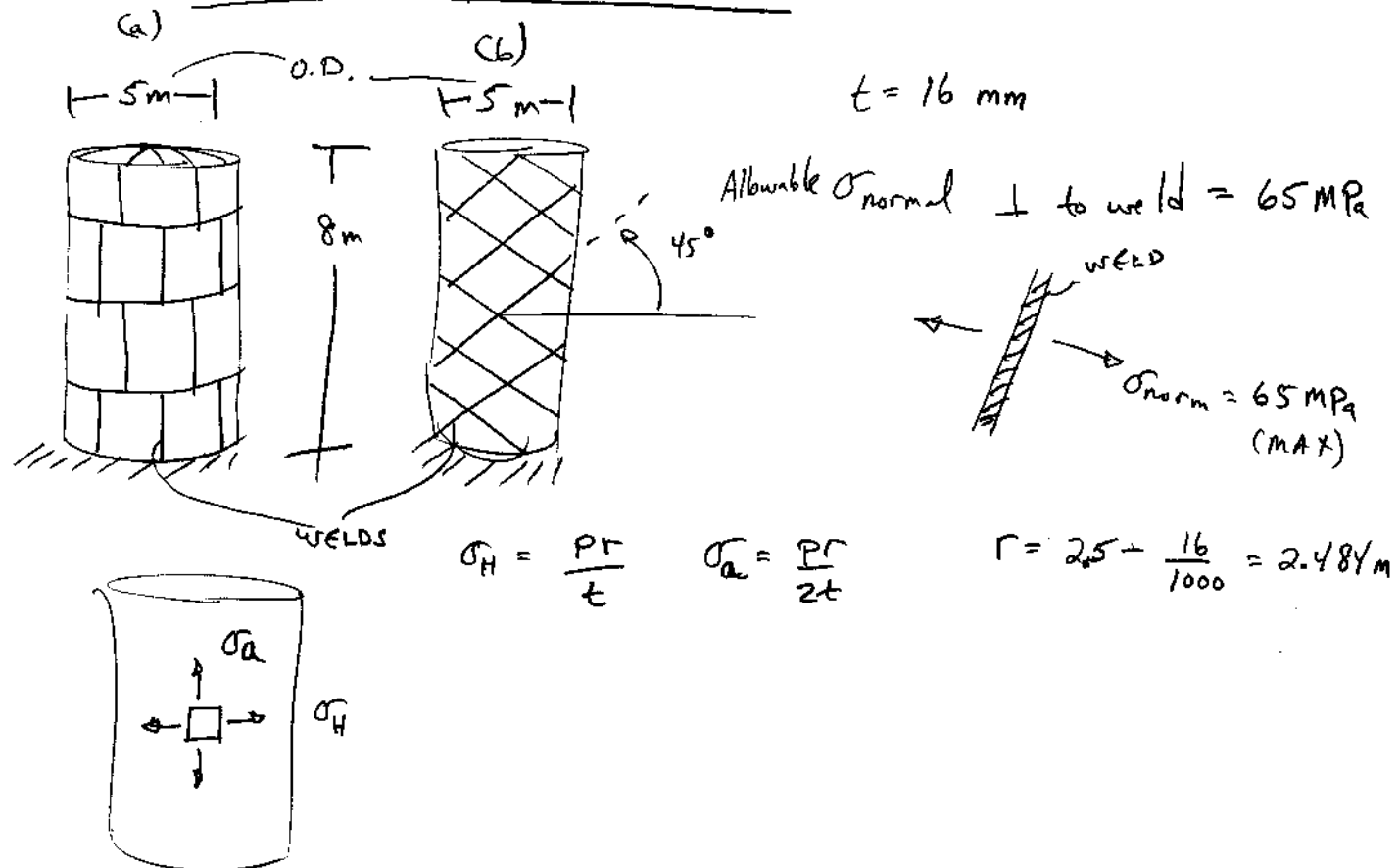


EXAMPLE

which weld pattern is better?

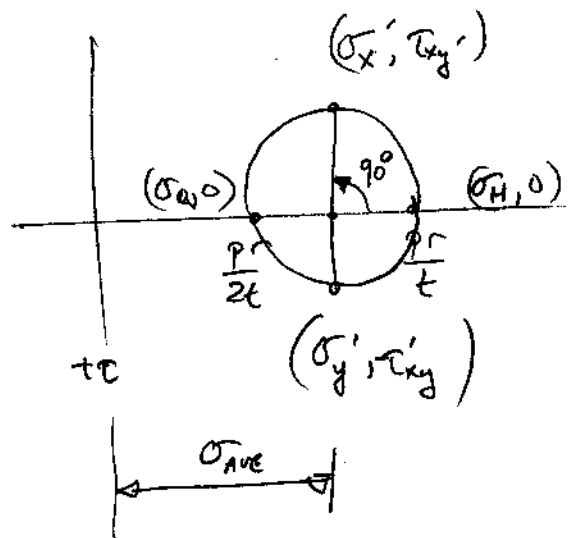


Case (a) Both  $\sigma_H \neq \sigma_a$  are  $\perp$  to the welds, but

$\sigma_H > \sigma_a$  so  $65 \text{ MPa} = \frac{Pr}{t}$      $P = \frac{(65)(16/1000)}{2.484} = 0.419 \text{ MPa}$

$P = 419 \text{ KPa}$  (Max pressure for case (a))

Case (b) The stress state needs to be rotate  $2 \times 45^\circ$  on Mohr's Circle



The new stress state,  $\sigma_x'$  is  $\perp$  to the weld line.

It is at  $\sigma_{AVE} = \frac{\frac{Pr}{t} + \frac{Pr}{2t}}{2}$

$\sigma_{AVE} = \frac{3}{4} \frac{Pr}{t}$

$(65) \text{ MPa} \frac{4}{3} \frac{t}{r} = P$

$P = 558 \text{ MPa}$  (MAX pressure) CASE (b)

So configuration (b) has the preferred weld pattern.