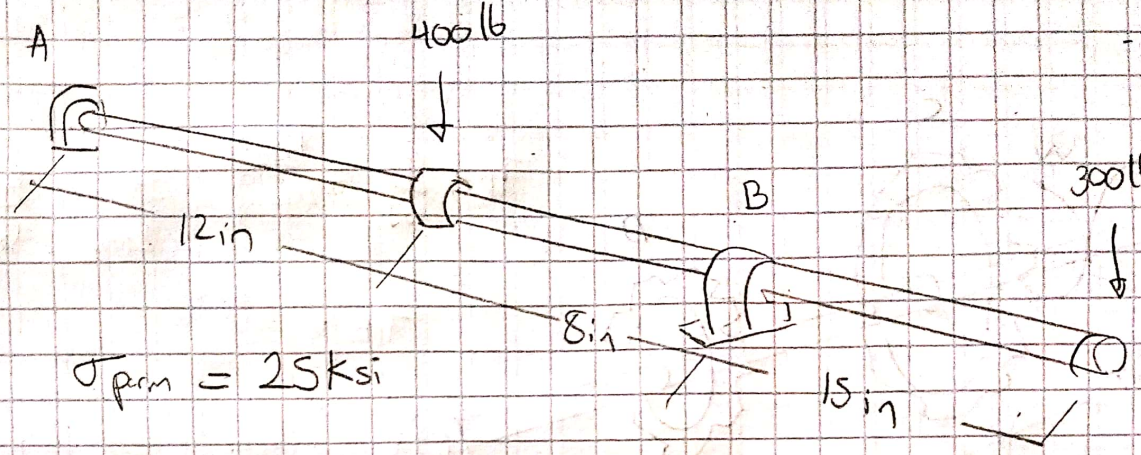
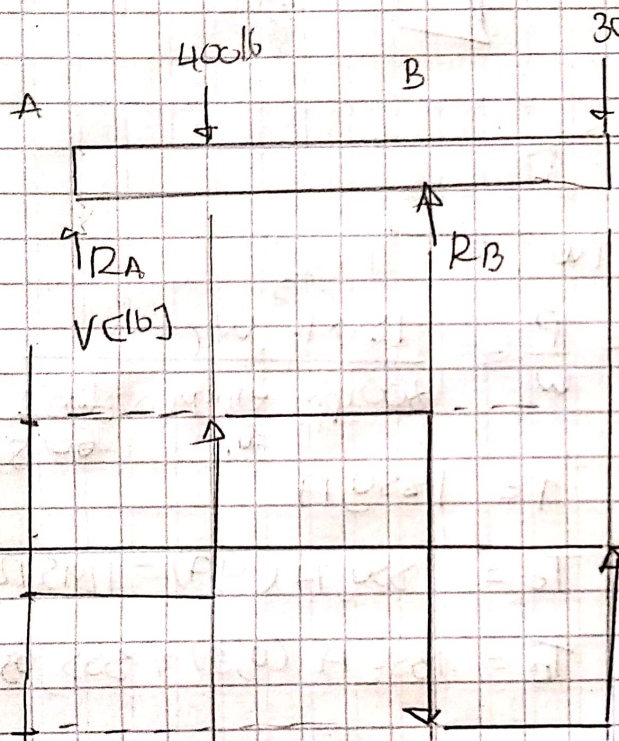
(3)



$\sigma_{perm} = 25 ksi$



$\Sigma M_A = 0$

$-400(12) + R_B(30) - 300(45) = 0$

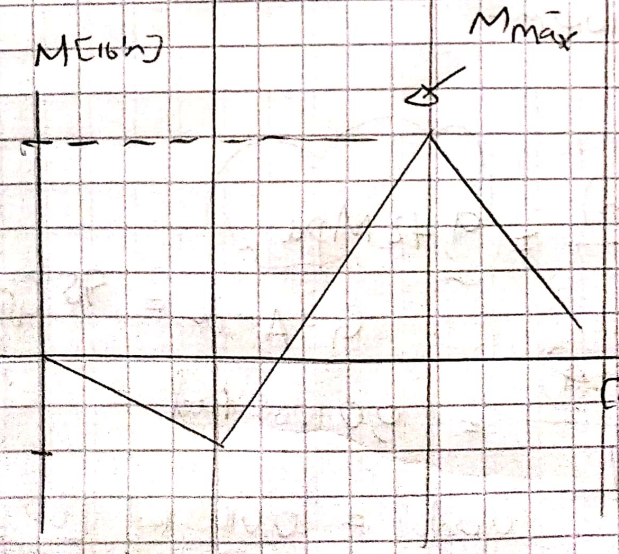
$R_B = \frac{400(12) + 300(45)}{30}$

$R_B = 610 lb.$

$\Sigma F = 0$

$-R_A + 400 + 300 - 610 = 0$

$R_A = 90 lb.$



$\sigma = \frac{Mc}{I} \qquad c = \frac{D}{2} = r$

$I = \frac{\pi D^4}{32}$ → 

$25 ksi = \frac{MD16}{\pi D^4}$

$D^3 = \frac{M16}{\pi (25 ksi)} \qquad D = \sqrt[3]{\frac{4500 lb\,in(16)}{\pi \cdot 25 ksi}}$

$D = 0,9714 in.$