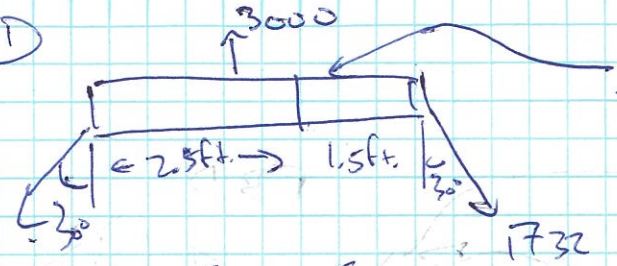
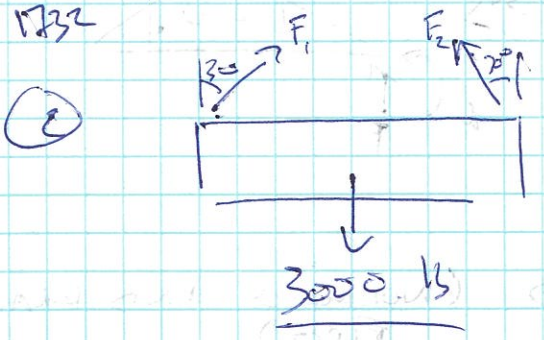
8.35





$\Sigma F_y = 0 = 2\cos 30 F_1 - 3000$

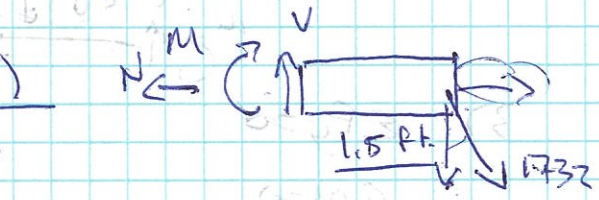
$\Rightarrow F_1 = 1500/\cos 30$

$= 1732$ lb

② ONLY BENDING (+NORMAL)

$I = 1(2)^3/12 = 8/12$ in^4

$\sigma_B = \frac{My}{I} = \frac{M(1)}{2/3}$



$N = \sin 30\ 1732$

$\Sigma F_x = 0 = -N + \sin 30\ 1732$

$= 866$ lb

$\sigma_N = 866/2\text{ in}^2$

$= 433$ psi

$\Sigma M = 0 = -M - 1.5(1500)$

$M = -2250$ ft-lb

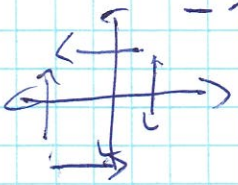
$\Rightarrow \sigma_B = \frac{-2250 \text{ ft lb}\ (-1 \text{ in})}{2/3 \text{ in}^4 2} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \Rightarrow$

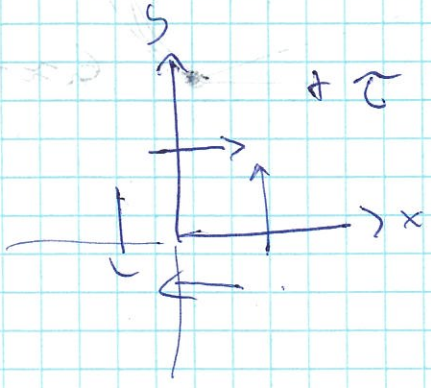
② @ B ONLY SHEAR (+NORMAL)

$\tau = \frac{VQ}{It} = \frac{1500 \text{ lb}\ (1)(1/2)\text{ in}^3}{2/3 \text{ in}^4\ 1 \text{ in}} \Rightarrow$

$\sigma = \sigma_N = 433$

$\tau =$

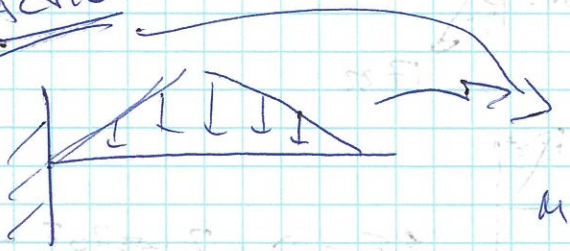




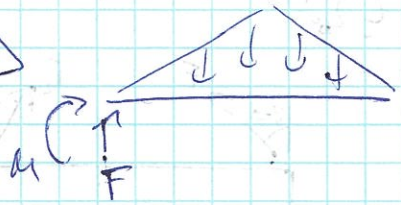
How to find

Beam Reactions

(Statics)



FBD

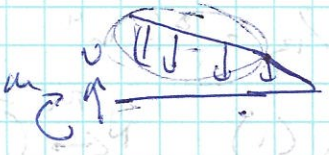


How to find

Internal Forces

1) FBD (Normally find reactions first)

2) Section @ point of interest



3) $\Sigma F_y = 0$

$\Sigma M = 0$

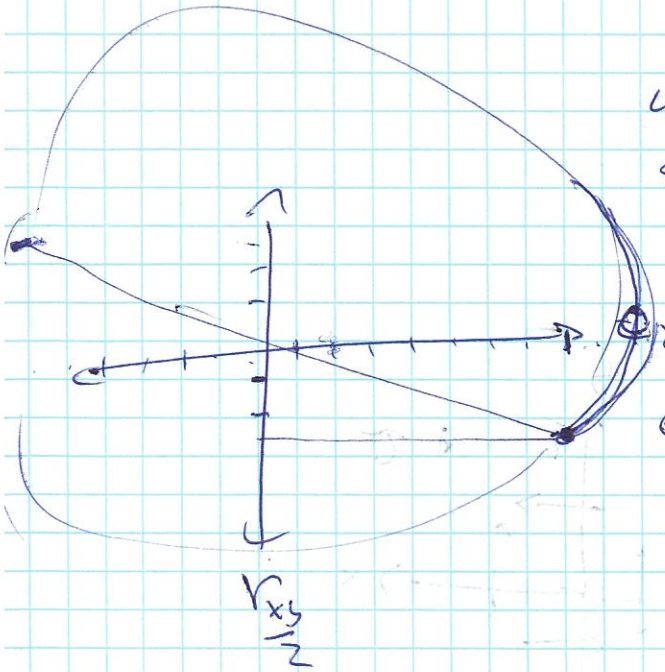
Indeterminata

Same as above +

4) Find slope/deflection

5) Apply B.C.'s

($v=0$, $dv/dx=0$, etc.)



200, -170, -130