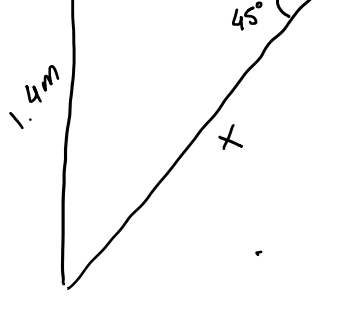
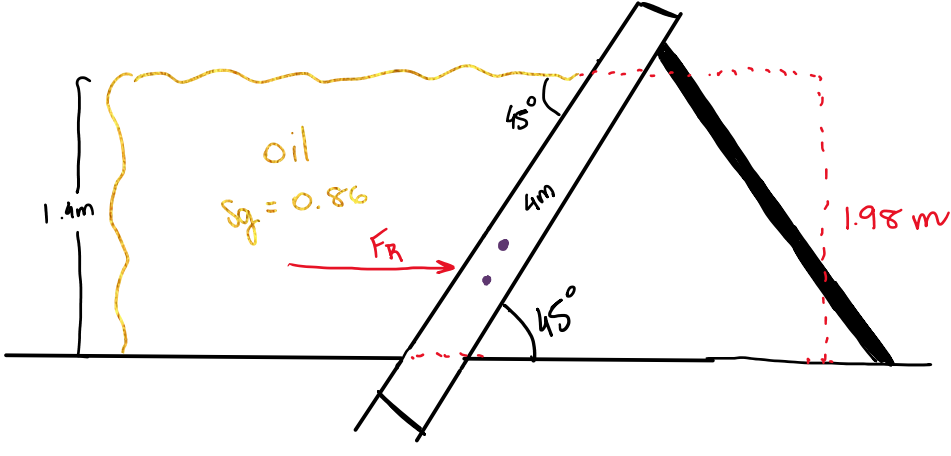


Hw 1.3

4.17



$\sin 45^\circ = \frac{1.4}{x} \rightarrow x = 1.98\text{ m}$

$A = 1.98 \times 4 = 7.92\text{ m}^2$

$F_R = \gamma h_c A$ $h_c = \frac{h}{3} = \frac{1.4}{3} = 0.47\text{ m}$

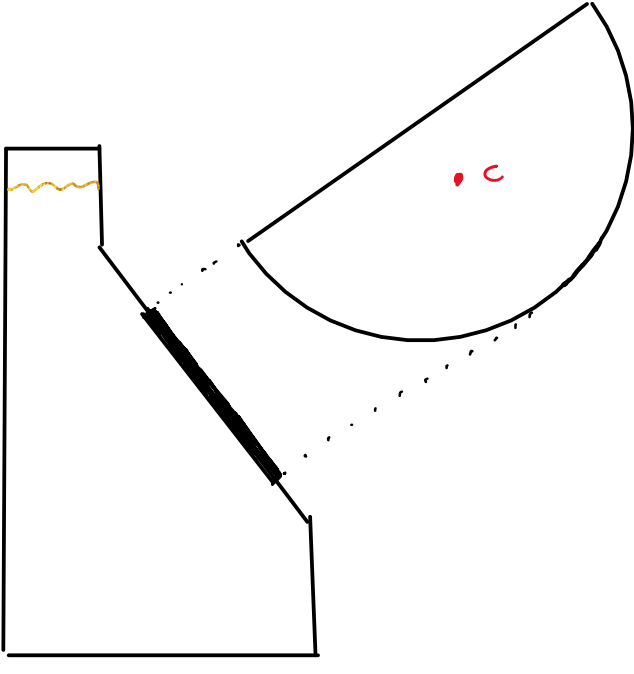
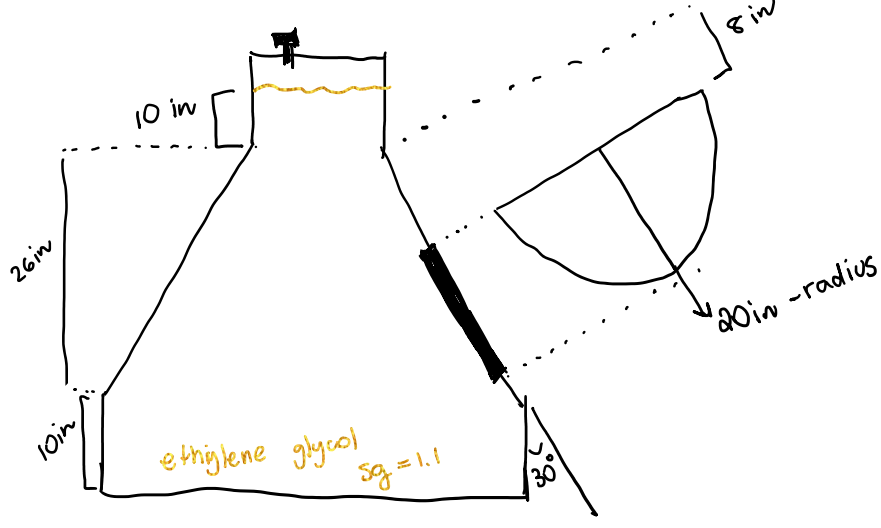
$S_g = \frac{\gamma}{1000}$ $L_c = \frac{1.98}{3} = 0.66\text{ m}$

$0.86 = \frac{\gamma}{1000}$ $L_p = \frac{2}{3} \cdot x = \frac{2 \times 1.98}{3} = 1.32\text{ m}$

$\gamma = 860\text{ kg/m}^3$ $h_p = \frac{2}{3} \cdot h = \frac{2 \times 1.4}{3} = 0.933\text{ m}$

$F_R = 860 \times 0.47 \times 7.92$
 $F_R = 3201.264\text{ N}$
 $= 32.01\text{ kN}$

4.28



$L_c = \frac{1}{2}$

$F = \gamma h_c A$ $L_p = L_c + \frac{I_c}{L_c A}$

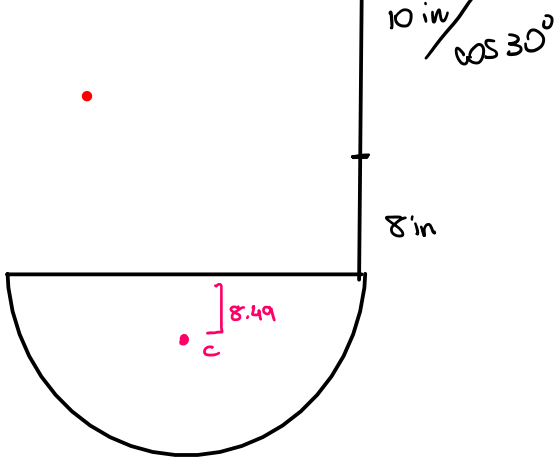
$C = \frac{4r}{3\pi} = 8.49\text{ in}$

$A = \frac{\pi r^2}{2} = \frac{\pi (20)^2}{2} = 628.3\text{ in}^2$

$L_c = 8.49 + 8 + \left(\frac{10}{\cos 30^\circ} \right) = 28\text{ inches}$

$h_c = L_c \sin 30^\circ = 28 \sin 30^\circ = 14\text{ in}$

$F = \gamma h_c A = 1.10 \times 14 \times 628.3 = 9675.82 \frac{\text{lb} \cdot \text{in}^3}{\text{ft}^3} \left(\frac{\text{ft}^3}{1728 \text{ in}^3} \right) = 5.6\text{ lb}$



$I_c = \frac{\pi}{8} (r)^4 = \frac{\pi}{8} (20)^4 = 62832\text{ in}^4$

$L_p = L_c + \frac{I_c}{L_c A} = 28 + \frac{62832}{28 \times 628.3} = 31.6\text{ in}$

$h_p = L_p \sin 30^\circ = 31.6 \sin 30^\circ = 15.8\text{ in}$