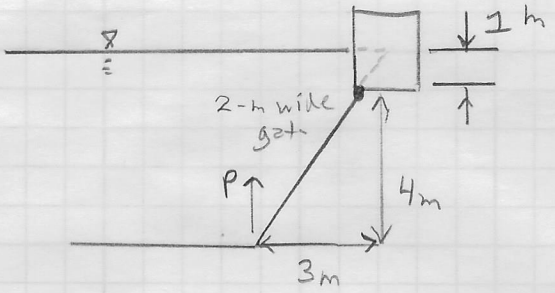
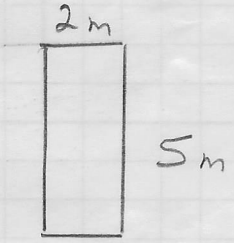
2pt Determine P necessary to just start opening the 2-m wide gate.



(3-4-5 triangle)



$\bar{h} = 3\,m$ (1.25 ↑)

$\bar{y} = 2.5\,m + (5/4)(1) = 3.75\,m$

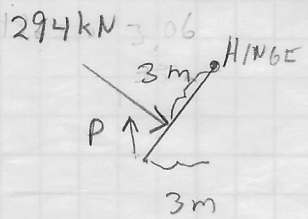
$Area = (5\,m)(2\,m) = 10\,m^2$

$I = \frac{bh^3}{12} = \frac{(2)(5)^3}{12} = 20.83\,m^4$

$|F| = (\gamma)(\bar{h})(A) = (9810\,N/m^3)(3\,m)(10\,m^2)$

$\boxed{|F| = 294\,kN}$

$y_{cp} = \bar{y} + \frac{I}{\bar{y}A} = 3.75 + \frac{20.83}{(3.75)(10)} = 4.3\,m$



$4.3 - 1.25 = 3\,m$

$\Sigma M_H = 0$

$(294\,kN)(3\,m) = (P)(3\,m)$

$\boxed{P = 294\,kN}$