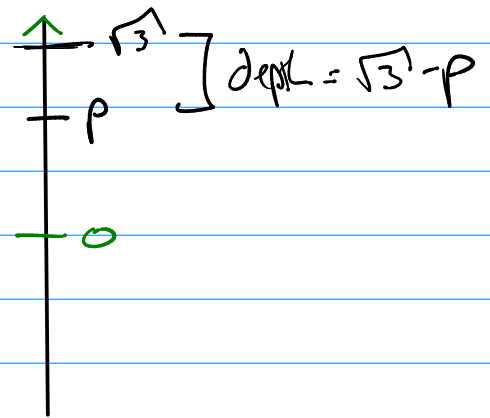
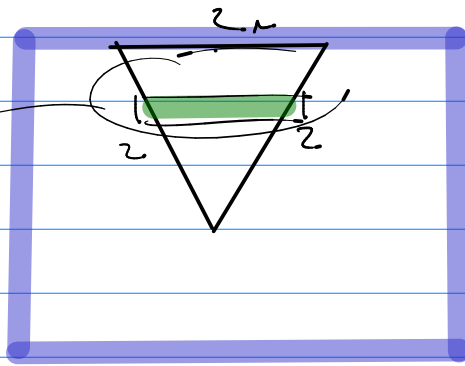
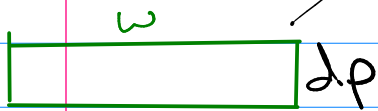


Math 293

Q15

8.3 #7



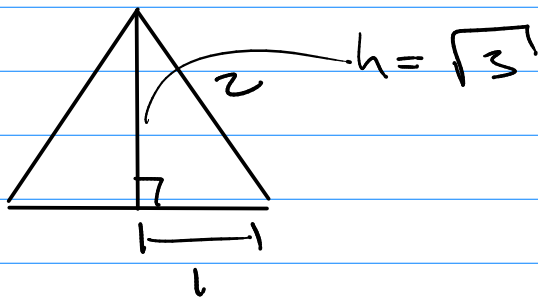
weight density

Scribble

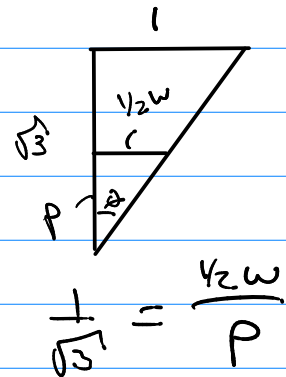
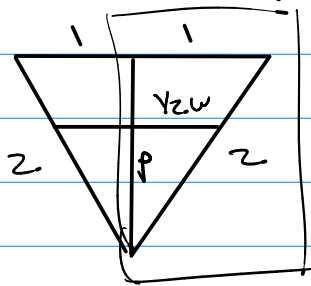
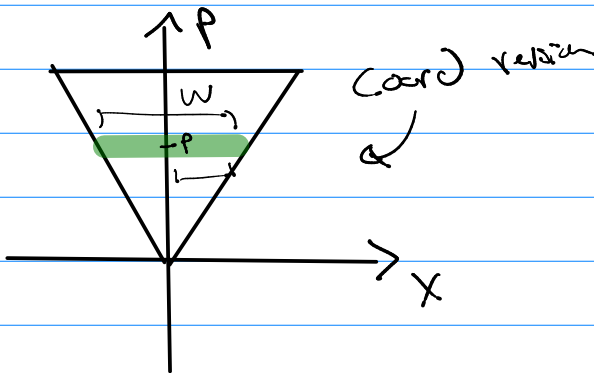
$$F_i = (\rho \cdot g) (\text{Area}) (\text{depth})$$

$\rho \cdot g$ (mass density) $(w \cdot dp)$ $(\sqrt{3} - p)$

(2) to know depth I need height



(3) what is w as an expression of p 's?



So $w = \frac{2\sqrt{3}}{3} p$

$$\therefore F_i = (\delta) (\overset{\text{w. dp}}{\text{Area}}) (\overset{\text{depth}}{\text{depth}})$$

$$F_i = (\delta) \left(\frac{2}{\sqrt{3}} p \, dp \right) (\sqrt{3} - p)$$

$$F = \int_0^{\sqrt{3}} (\delta) \frac{2}{\sqrt{3}} p (\sqrt{3} - p) \, dp$$

$$F = \frac{2}{\sqrt{3}} \delta \int_0^{\sqrt{3}} (\sqrt{3} p - p^2) \, dp = \underline{\underline{\text{Finish!}}}$$

2D Centers of Mass

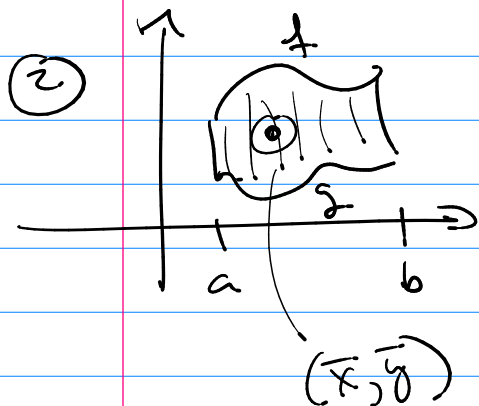
(const. density (= $\frac{\text{mass}}{\text{area}}$) sheet)



$$A = \int_a^b f(x) \, dx$$

$$\bar{x} = \frac{1}{A} \int_a^b x f(x) \, dx$$

$$\bar{y} = \frac{1}{A} \int_a^b \frac{1}{2} (f(x))^2 \, dx$$

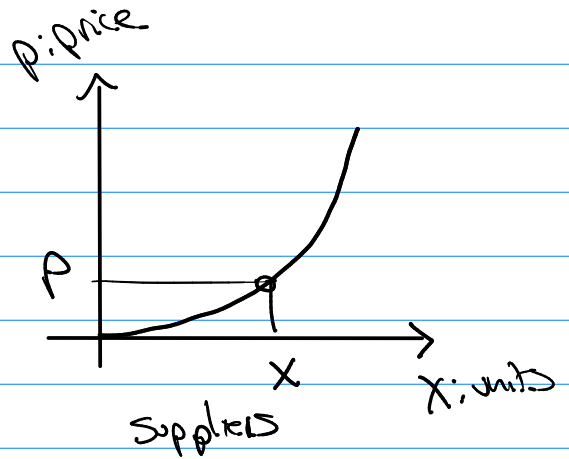
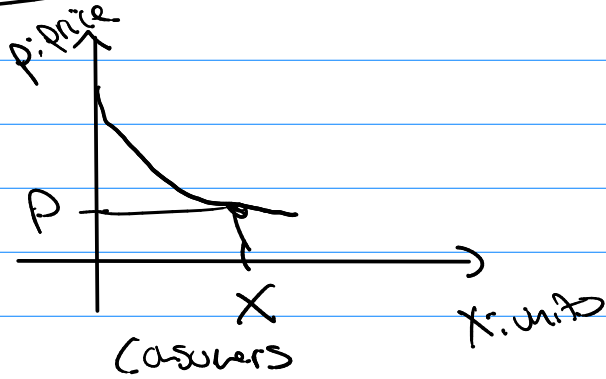


$$A = \int_a^b (f - g) \, dx$$

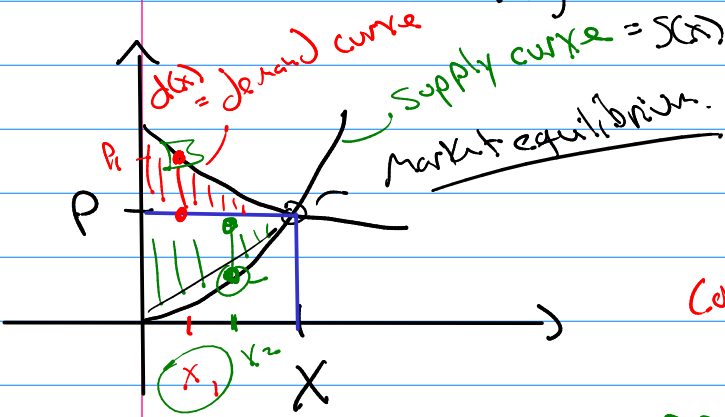
$$\bar{x} = \frac{1}{A} \int_a^b (x f - x g) \, dx$$

$$\bar{y} = \frac{1}{A} \int_a^b \left(\frac{1}{2} f^2 - \frac{1}{2} g^2 \right) \, dx$$

8.4 Economics



X, P Market equilibrium.



$X \cdot P = \text{Money Spent to get } X \text{ items}$

Consumer surplus = $\int_0^X [d(x) - P] dx$

Producer surplus = $\int_0^X [P - S(x)] dx$