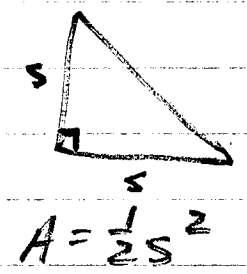
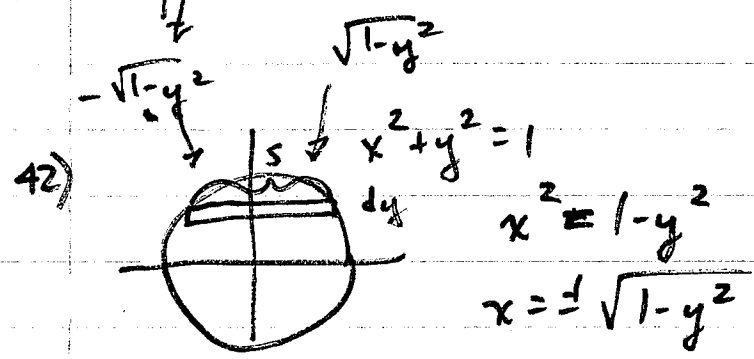


$$\int_1^e (\ln x)^2 dx$$



$$s = \sqrt{1 - y^2} - - \sqrt{1 - y^2}$$

$$\int_{-1}^1 \frac{1}{2} (2\sqrt{1 - y^2})^2 dy =$$

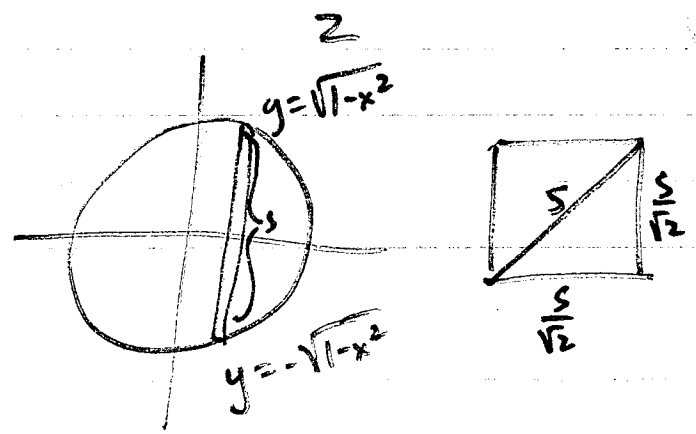
$$A = \frac{1}{2} (2\sqrt{1 - y^2})^2$$

1c) $\frac{(2\sqrt{1 - x^2})^2}{2}$

$$\frac{2^2 \sqrt{1 - x^2}^2}{2}$$

$$(x^3 y^4)^2$$

$$(x^3)^2 (y^4)^2$$

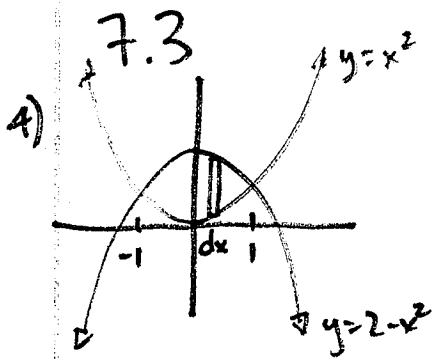


$$A = \left(\frac{s}{\sqrt{2}}\right)^2 = \frac{s^2}{2}$$

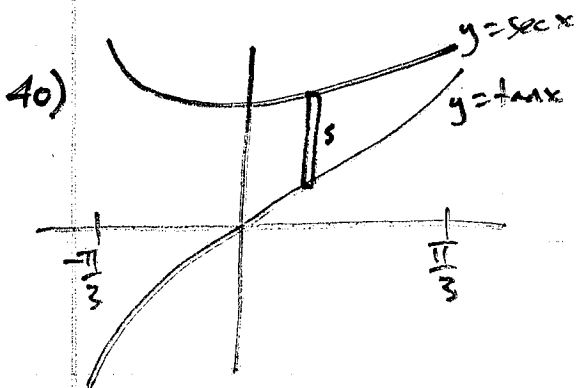
$$A = \frac{(2\sqrt{1 - x^2})^2}{2}$$

$$s = \sqrt{1 - x^2} - - \sqrt{1 - x^2}$$

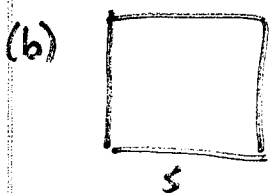
$$= 2\sqrt{1 - x^2}$$



$$s = (2 - x^2) - x^2$$



$$s = \sec x - \tan x$$

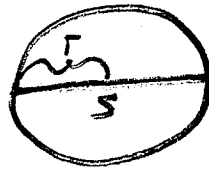


$$A = s^2$$

$$\int_{\frac{\pi}{3}}^{\frac{2\pi}{3}} (\sec x - \tan x)^2 dx =$$

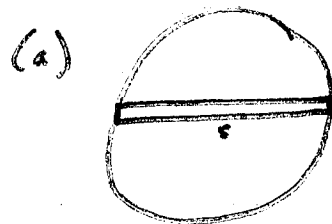
$$A = \pi r^2$$

$$A = \pi \left(\frac{s}{2}\right)^2$$



$$A = \pi \left(\frac{2-2x^2}{2}\right)^2$$

$$\int_{-1}^1 \pi (1-x^2)^2 dx =$$



$$A = \pi \left(\frac{s}{2}\right)^2$$

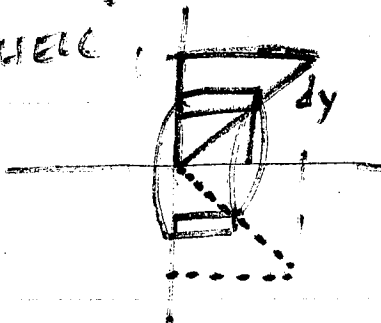
$$= \pi \frac{s^2}{4}$$

$$\int_{\frac{\pi}{3}}^{\frac{2\pi}{3}} \pi \frac{(\sec x - \tan x)^2}{4} dx \approx 3.796$$

7.3

15) $y=x, y=1, x=0$ ABOUT X-AXIS

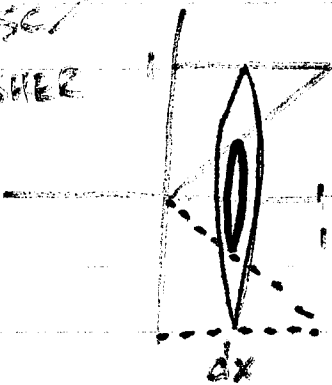
SHELL



$$2\pi r h$$

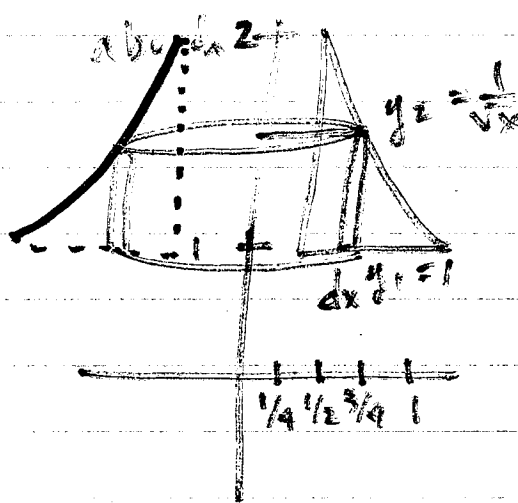
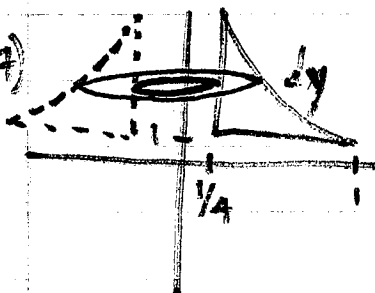
$$2\pi \int_0^1 y y dy$$

DISC/WASHER



$$\pi \int_0^1 [1^2 - x^2] dx$$

47)



$$2\pi \int_{1/4}^1 x \left[\frac{1}{\sqrt{x}} - 1 \right] dx$$

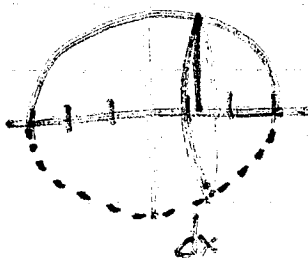
$$\frac{1}{\sqrt{x}} = y$$

$$\sqrt{x} = \frac{1}{y}$$

$$x = \frac{1}{y^2}$$

$$\pi \int_{1/4}^2 \left[\left(\frac{1}{y^2}\right)^2 - \left(\frac{1}{4}\right)^2 \right] dy$$

13) $y = \sqrt{9-x^2}, y=0$



$$y = \sqrt{9-x^2}$$

$$y^2 = 9-x^2$$

$$x^2 + y^2 = 9$$

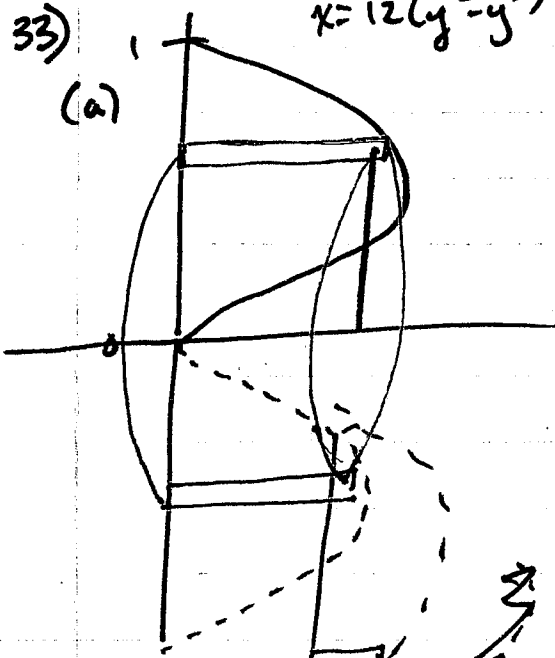
$$\pi \int_{-3}^3 (\sqrt{9-x^2})^2 dx$$

7.3

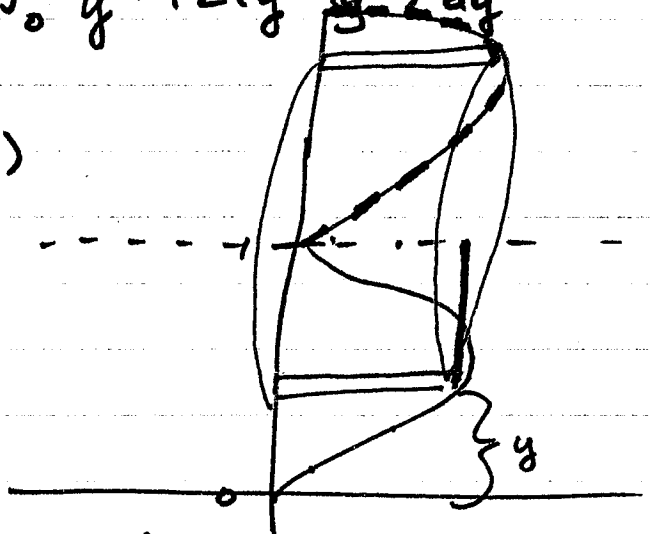
33)

$$x = 12(y^2 - y^3) \quad 2\pi \int_0^1 y \cdot 12(y^2 - y^3) dy$$

(a)

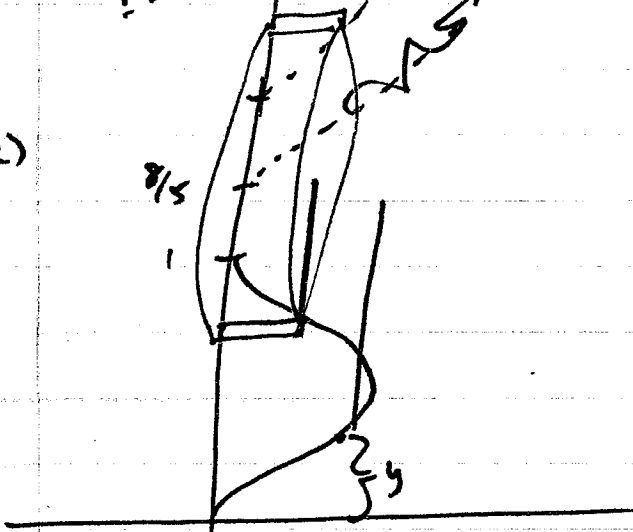


(b)

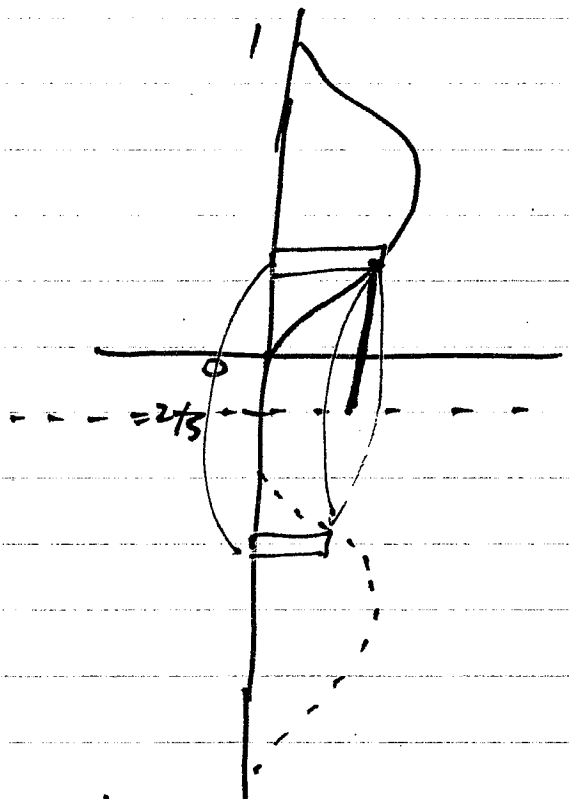


$$2\pi \int_0^1 (1-y) \cdot 12(y^2 - y^3) dy$$

(c)



$$2\pi \int_0^1 \left(\frac{8}{5} - y\right) \cdot 12(y^2 - y^3) dy$$



$$2\pi \int_0^1 \left(y + \frac{2}{5}\right) \cdot 12(y^2 - y^3) dy$$

7.3

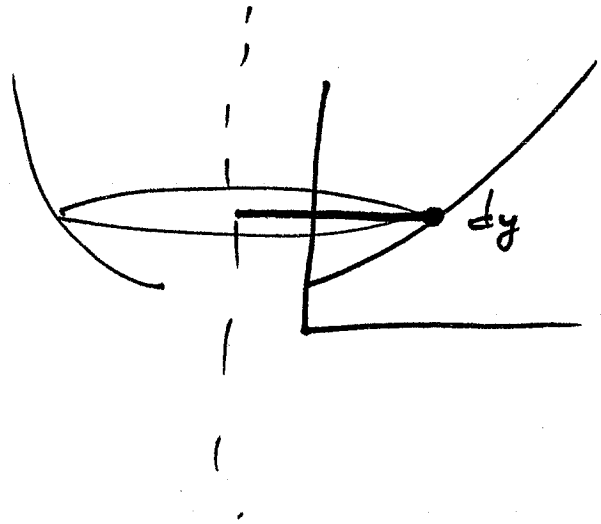
$$57) x = y^{1/2} - \left(\frac{1}{3}\right)^{3/2}, \quad 1 \leq y \leq 3, \quad y\text{-axis}$$

$$S = 2\pi \int_1^3 \left[y^{1/2} - \left(\frac{1}{3}\right)^{3/2} \right] \sqrt{1 + \left[\frac{1}{2} y^{-1/2} \right]^2} dy$$

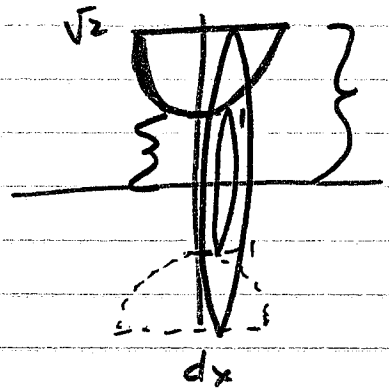
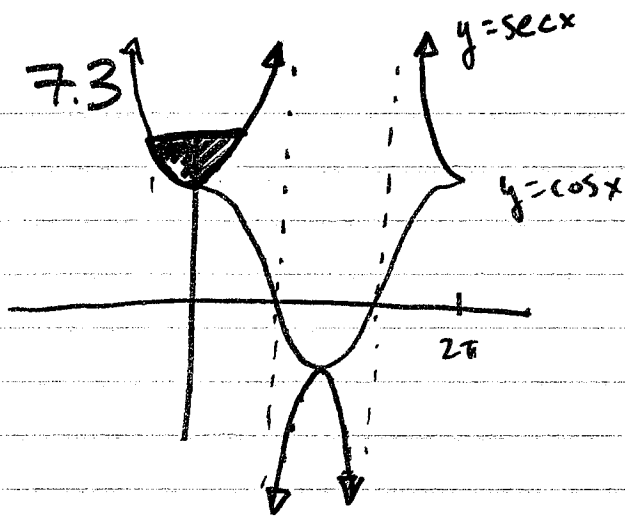
$$x = y^{1/2} - \left(\frac{1}{3}\right)^{3/2}$$

$$x + \left(\frac{1}{3}\right)^{3/2} = y^{1/2}$$

$$\left(x + \left(\frac{1}{3}\right)^{3/2} \right)^2 = y$$

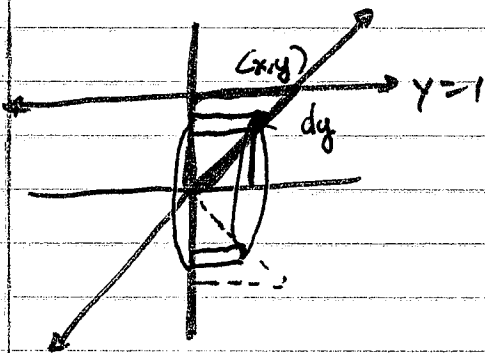


19)



$$\pi \int_{-\pi/4}^{\pi/4} [(\sqrt{2})^2 - (\sec x)^2] dx =$$

15) $y = x, y = 1, x = 0$



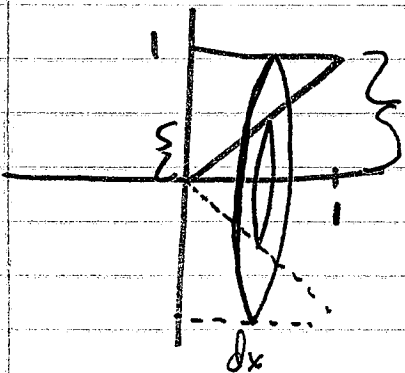
SHELL

$$2\pi \int_0^1 y \cdot y \, dy$$

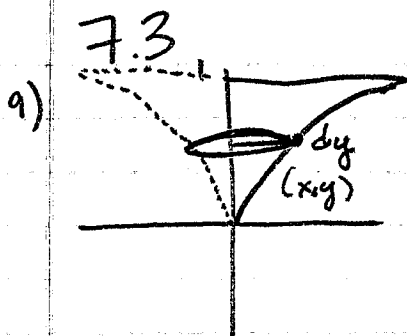
$x = y$

WASHER

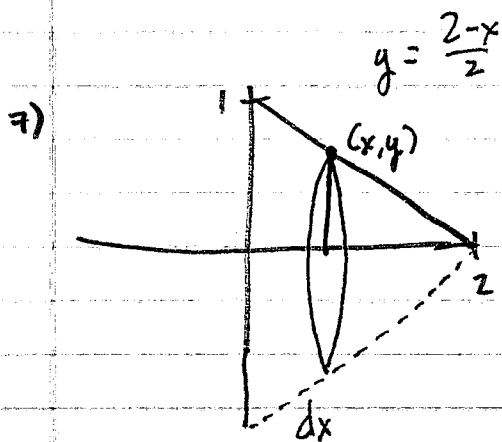
$$\pi \int_0^1 [1^2 - x^2] dx$$



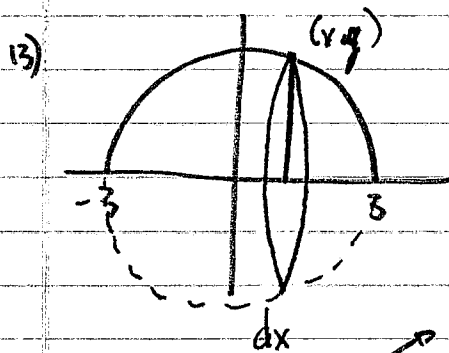
DISC/WASHER



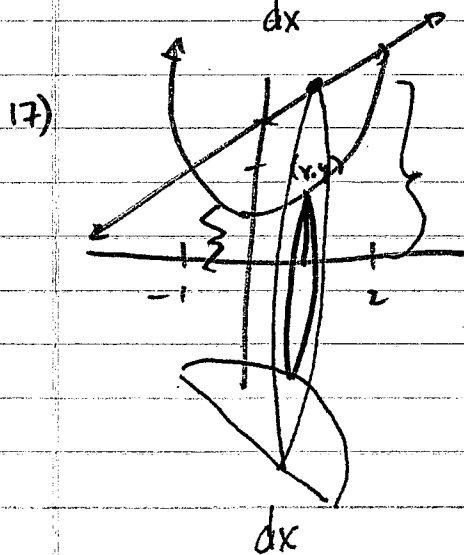
$$\pi \int_0^1 \left[\tan\left(\frac{\pi}{4}y\right) \right]^2 dy$$



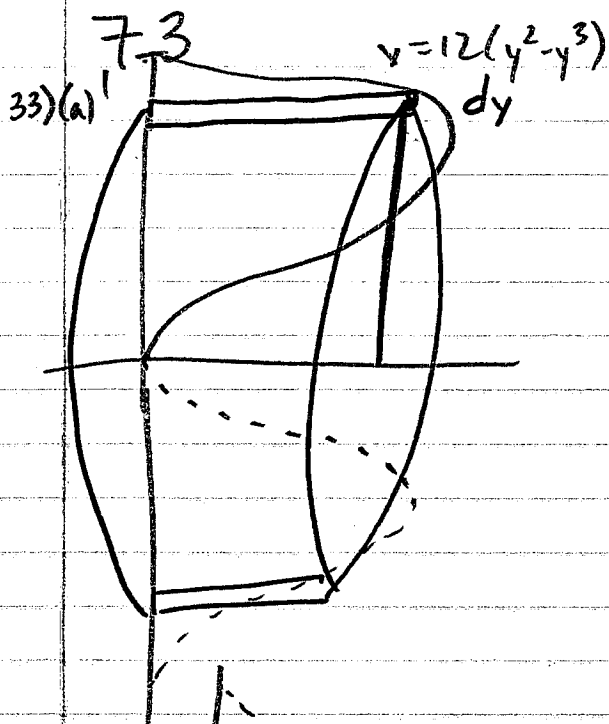
$$\pi \int_0^2 \left(\frac{2-x}{2} \right)^2 dx$$



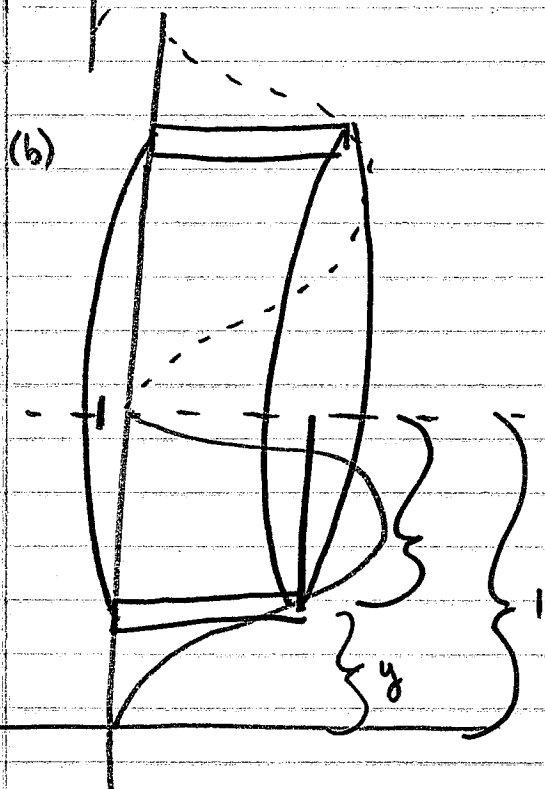
$$\pi \int_{-3}^3 \left(\sqrt{9-x^2} \right)^2 dx$$



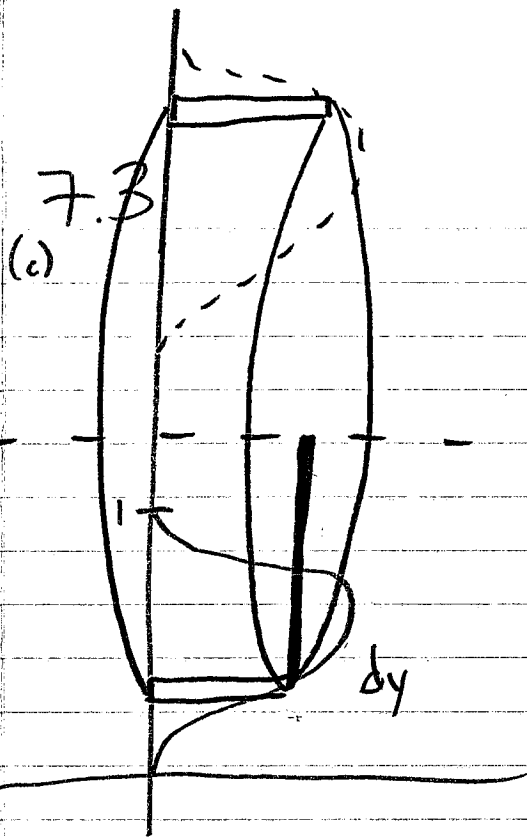
$$\pi \int_{-1}^2 \left[(x+3)^2 - (x^2+1)^2 \right] dx$$



$$2\pi \int_0^1 y (12(y^2 - y^3)) dy$$

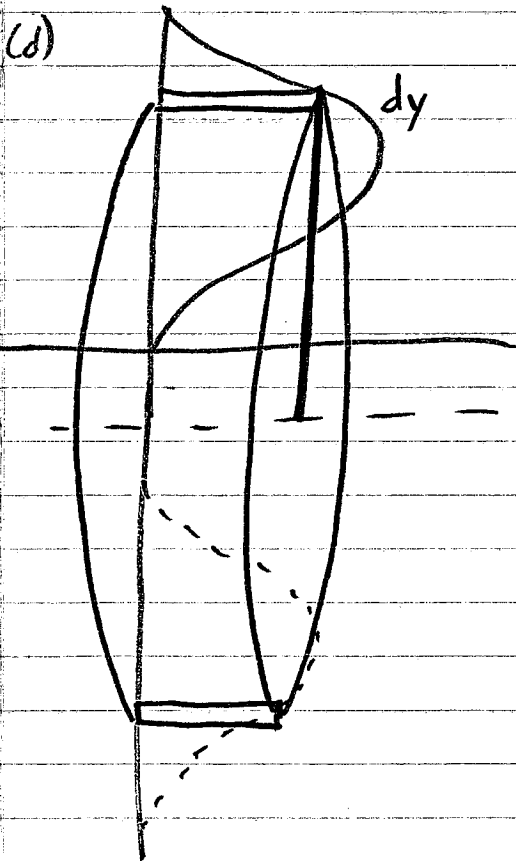


$$2\pi \int_0^1 (1-y)(12(y^2 - y^3)) dy$$



$$y = \frac{8}{5}$$

$$2\pi \int_0^1 \left(\frac{8}{5} - y\right) (12(y^2 - y^3)) dy$$

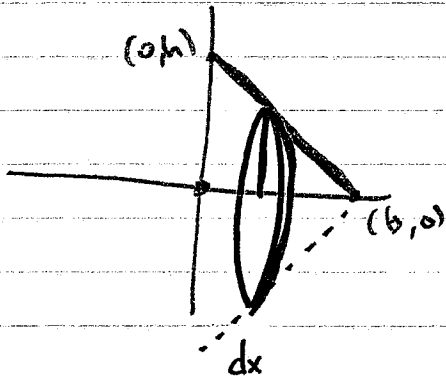


$$2\pi \int_0^1 \left(y + \frac{2}{5}\right) (12(y^2 - y^3)) dy$$

$$y = -\frac{2}{5}$$

7.3

32)



$$m = \frac{0-h}{b-0} = -\frac{h}{b}$$

$$y = -\frac{h}{b}x + h$$

$$\left(-\frac{b}{h}\right) \pi \int_0^b \left(-\frac{h}{b}x + h\right)^2 dx \left[\frac{-h}{b}\right] du$$

$$u = -\frac{h}{b}x + h$$

$$du = -\frac{h}{b} dx$$

$$\frac{-1}{5/b} \cdot \pi \int_h^0 u^2 du$$

$$\frac{-1}{5/b} \cdot \pi \left| \frac{1}{3} u^3 \right|_h^0$$

$$\frac{-1}{5/b} \cdot \pi \left[\frac{1}{3} (0)^3 - \frac{1}{3} h^3 \right]$$

$$+ \frac{b}{5} \cdot \pi \cdot \frac{1}{3} h^3$$

$$\frac{1}{3} \pi b h^2$$



dx