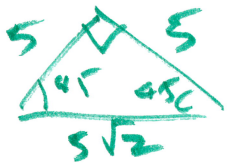
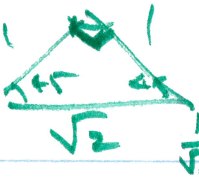
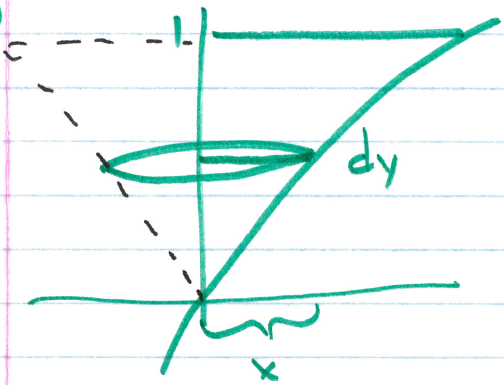




7.3

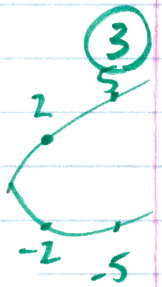
(9)

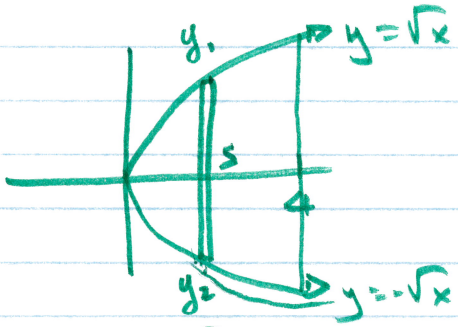


$x = \tan\left(\frac{\pi}{4}y\right)$

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

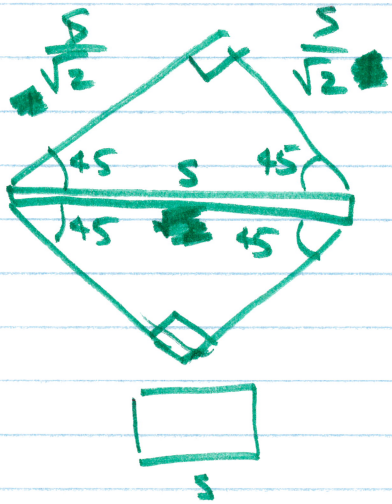
(3)





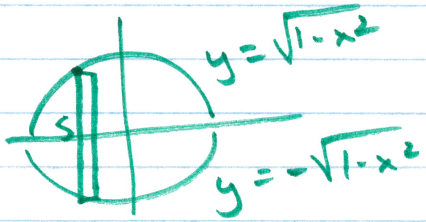
$\sqrt{x} - -\sqrt{x} = 2\sqrt{x} = s$

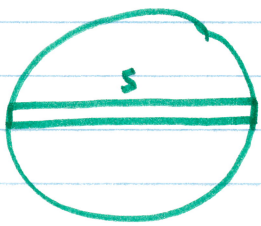
$$\int_0^4 \frac{(2\sqrt{x})^2}{2}\,dx$$



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

(1) (a)





$A = \pi r^2$

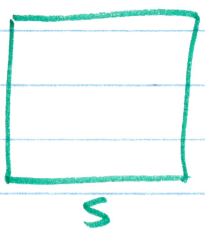
$A = \pi\left(\frac{s}{2}\right)^2$

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

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

$$\pi\frac{(2\sqrt{1-x^2})^2}{4} = \pi\cdot\frac{4(1-x^2)}{4} = \pi(1-x^2)$$

(b) $(2\sqrt{1-x^2})^2 = 4(1-x^2)$

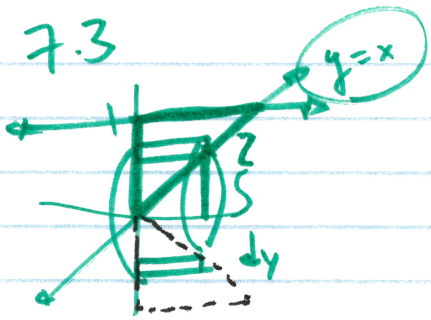


$A = s^2$

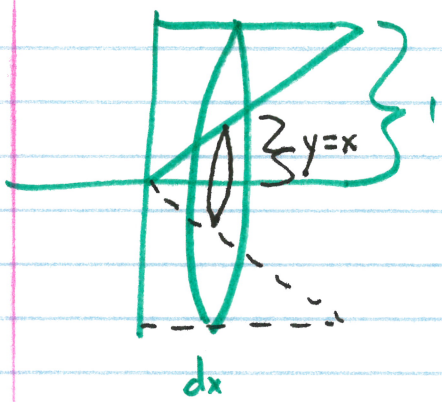
$y \cdot x \, dy$

7.3

(15)



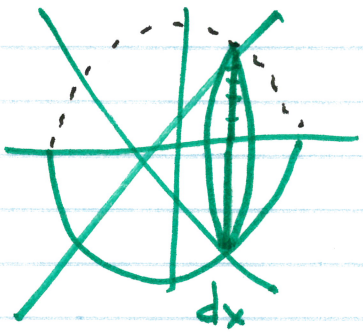
$$2\pi \int_0^1 y \cdot y \, dy$$



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

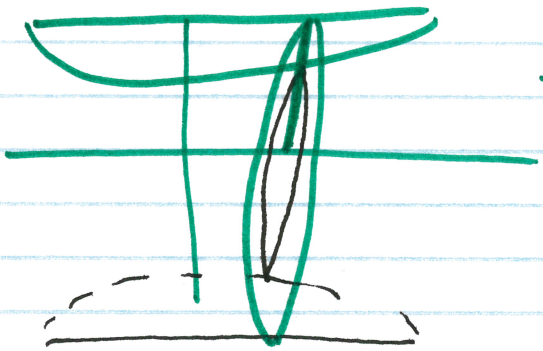
7.3

(19) $y = \sec x$, $y = \sqrt{2}$, $-\frac{\pi}{4} \le x \le \frac{\pi}{4}$



$$\pi \int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} (\sec x)^2 \, dx$$

$$= \pi^2 - 2\pi \qquad 3.586$$



$$\pi \int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \left[(\sqrt{2})^2 - (\sec x)^2 \right] dx$$

(29) (a)

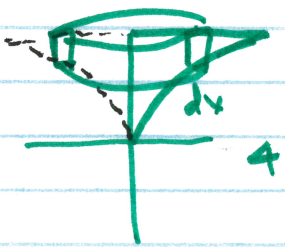
$y = \sqrt{x}$

$y^2 = x$

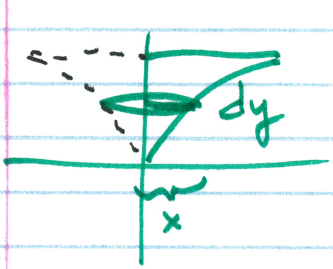
$$2\pi \int_0^2 y \cdot y^2 \, dy$$

$$2\pi \int_0^2 y^3 \, dy = 8\pi$$

(b)



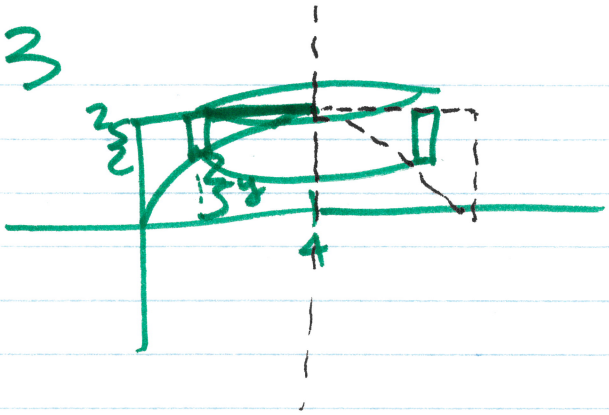
$$2\pi \int_0^4 x(2 - \sqrt{x}) \, dx$$



$$\pi \int_0^2 (y^2)^2 \, dy$$

7.3

(29) (d)

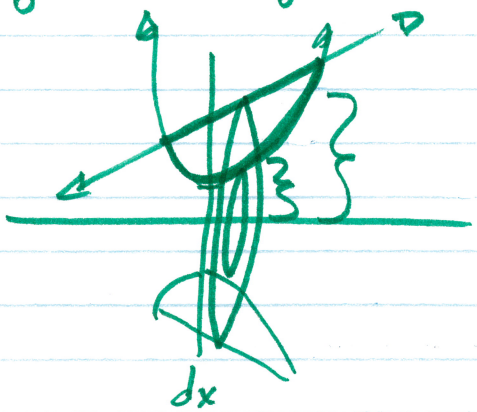


$$2\pi \int_0^4 (4-x)(2-\sqrt{x})\,dx = \frac{224\pi}{15} \quad 46.914$$

✓ ✓

7.3

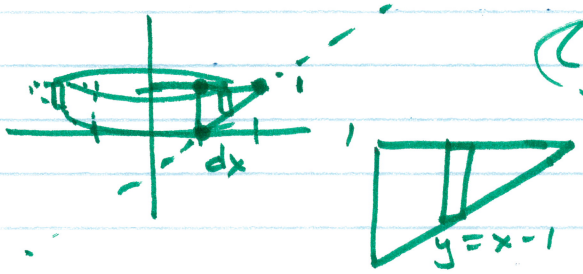
(17) $y = x^2 + 1$, $y = x + 3$ about x-axis



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

$$\frac{117\pi}{5} \approx 73.513$$

(25)



(1,0), (2,1) $\quad \frac{1-0}{2-1} = 1$

$y = mx + b$

$0 = 1(1) + b$

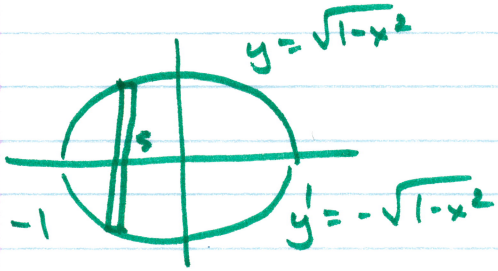
$-1 = b$

$y = x - 1$

$$2\pi \int_{1}^{2} x \left(\underset{\text{TOP}}{1} - \underset{\text{BOTTOM}}{(x-1)} \right) dx$$

$$\frac{4\pi}{3} \approx 4.189$$

(1)



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

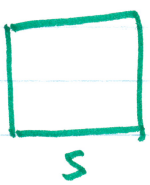
(a)

$A = \pi r^2$

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

$$\int_{-1}^{1} \pi \left(\frac{2\sqrt{1-x^2}}{2} \right)^2 dx$$

(b)



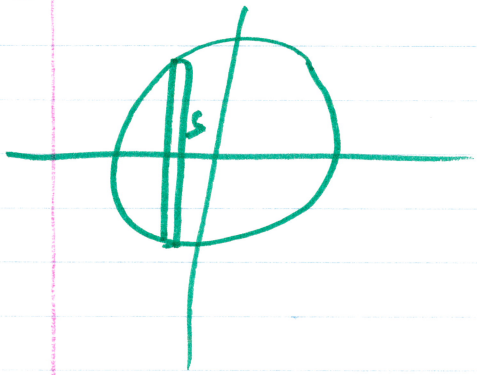
$A = s^2$

$$\int_{-1}^{1} \left(2\sqrt{1-x^2} \right)^2 dx$$

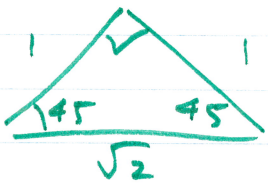
5.333

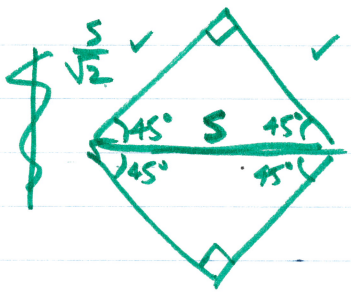
7.3

① (c) $s = 2\sqrt{1-x^2}$

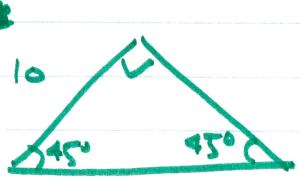


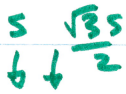
$$\int_{-1}^{1} \frac{\left(2\sqrt{1-x^2}\right)^2}{2}\,dx = 2.667$$



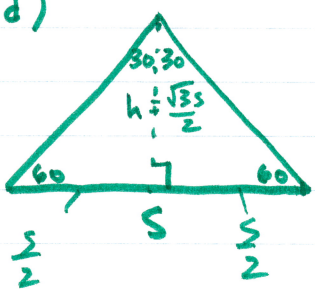


$$A = \left(\frac{s}{\sqrt{2}}\right)^2 = \frac{s^2}{2}$$





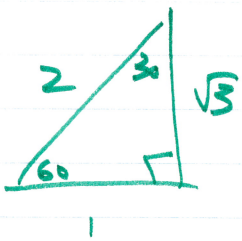
(d)



$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}\cdot s \cdot \frac{\sqrt{3}s}{2}$$

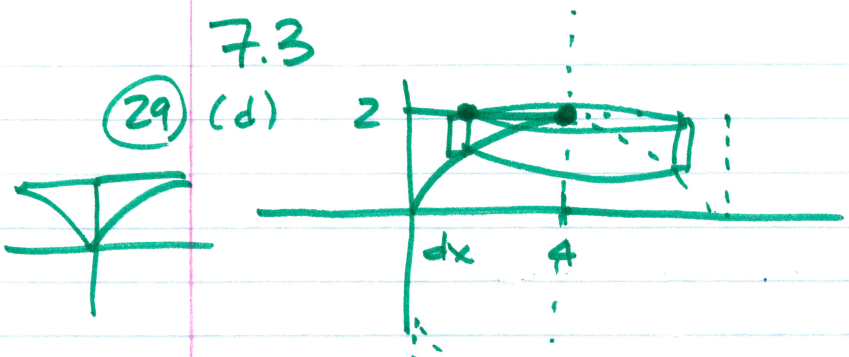
$$= \frac{\sqrt{3}s^2}{4}$$



$$\int_{-1}^{1} \frac{\sqrt{3}\left(2\sqrt{1-x^2}\right)^2}{4}\,dx = 2.309$$

7.3

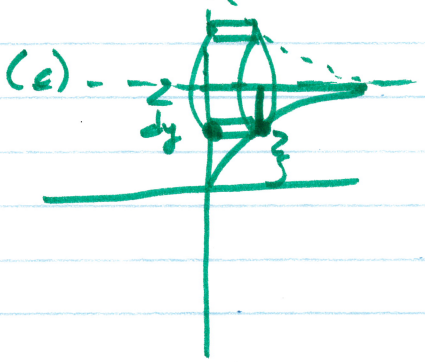
(29) (d)



$$\int_0^4 2\pi (4-x)(2-\sqrt{x})\,dx$$

$$\frac{224\pi}{15} \simeq 46.914$$

(e)



$$2\pi \int_0^2 (2-y)\,y^2\,dy = \frac{8\pi}{3} \approx 8.378$$