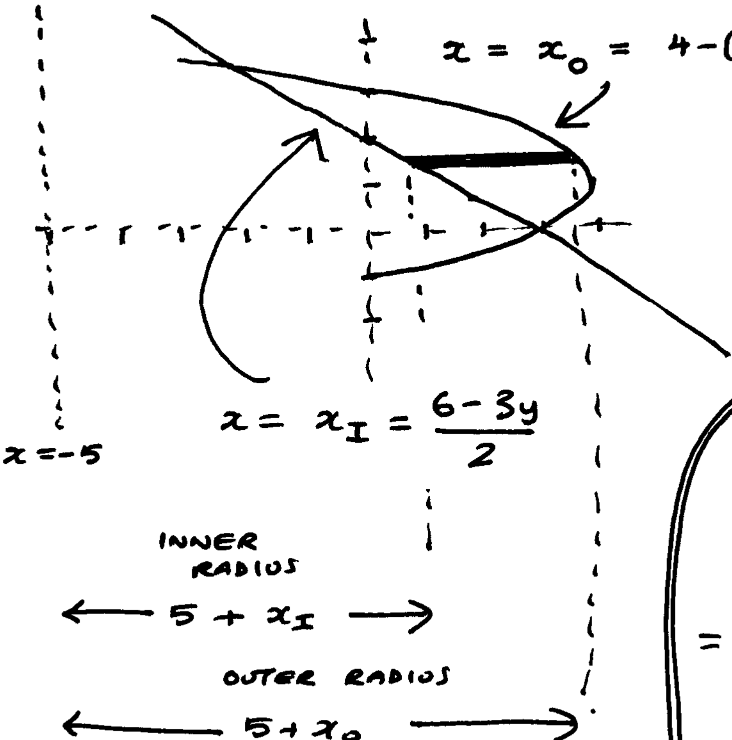
The line $2x+3y=6$ meets the parabola $(y-1)^2 = 4-x$ where $(y-1)^2 = 4-\left(\frac{6-3y}{2}\right) = \frac{3}{2}y+1 \Rightarrow y^2 = \frac{7}{2}y \Rightarrow y\left(y-\frac{7}{2}\right)=0$, hence where $y=0$ (and $x=3$) and where $y=\frac{7}{2}$ (and $x=-\frac{9}{4}$). So



the element of volume is

$$\delta V \approx \left\{\pi(5+x_0)^2 - \pi\left(5+x_I\right)^2\right\}\delta y$$

$$= \pi\left\{(5+x_0)^2-(5+x_I)^2\right\}\delta y$$

and the volume is

$$V = \int_{y=0}^{y=7/2} \pi\left\{(5+x_0)^2-(5+x_I)^2\right\}dy$$

$$= \pi\int_0^{7/2}\left(\left\{5+4-(y-1)^2\right\}^2 - \left\{5+\frac{6-3y}{2}\right\}^2\right)dy$$

$$= \pi\int_0^{7/2}\left\{\left(8+2y-y^2\right)^2 - \left(8-\frac{3}{2}y\right)^2\right\}dy$$

$$= \pi\int_0^{7/2}\left\{56y - \frac{57}{4}y^2 - 4y^3 + y^4\right\}dy$$

$$= \pi\left(28y^2 - \frac{19}{4}y^3 - y^4 + \frac{y^5}{5}\right)\Bigg|_0^{7/2}$$

$$= \pi\left\{28\left(\frac{7}{2}\right)^2 - \frac{19}{4}\left(\frac{7}{2}\right)^3 - \left(7/2\right)^4 + \left(7/2\right)^5/5 - 0\right\}$$

$$= \frac{3773\pi}{40} \approx 296.3$$