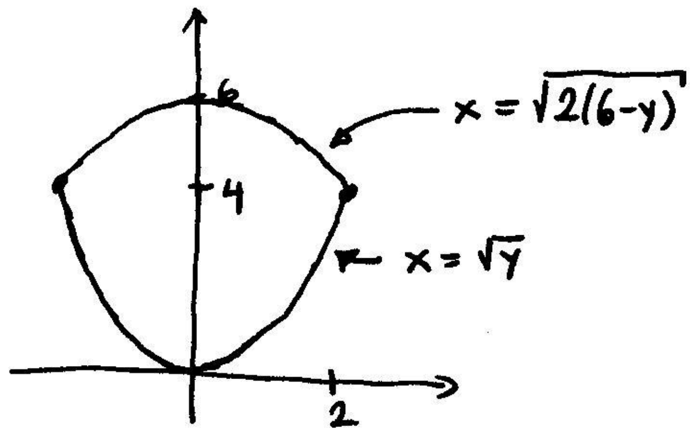
#26(b): I solve $y = 6 - \frac{1}{2}x^2$ and $y = x^2$ respectively
(disks) for x, because I need the radius x as a function of y. These radii are $x = \sqrt{2(6-y)}$ and $x = \sqrt{y}$ respectively



$$\text{Volume} = \int_0^4 \pi(\sqrt{y})^2\,dy + \int_4^6 \pi\left(\sqrt{2(6-y)}\right)^2 dy =$$

$$= \pi\int_0^4 y\,dy + \pi\int_4^6 (12-2y)\,dy = \underline{\underline{12\pi}}$$

shells:

They are more convenient here, b/c
(a) we needn't solve for x, (b) we needn't split the integral:

$$\text{volume} = \int_0^2 2\pi x\left(6 - \tfrac{1}{2}x^2 - x^2\right)dx = 2\pi\int_0^2\left(6x - \tfrac{3}{2}x^3\right)dx$$

$$= 2\pi\left[3x^2 - \tfrac{3}{8}x^4\right]_0^2 = 2\pi(12-6) = \underline{\underline{12\pi}}$$

#26(c): We rotate about the y axis: $\text{Surface} = \int 2\pi x\sqrt{1+\left(\frac{dx}{dy}\right)^2}\,dy$

- For y between 0 and 4: $x = \sqrt{y}$, $\frac{dx}{dy} = +\frac{1}{2\sqrt{y}}$

For y between 4 and 6: $x = \sqrt{12-2y}$, $\frac{dx}{dy} = \frac{-1}{\sqrt{12-2y}}$