§6.2 - 6.3 Quiz
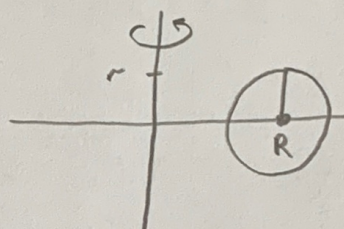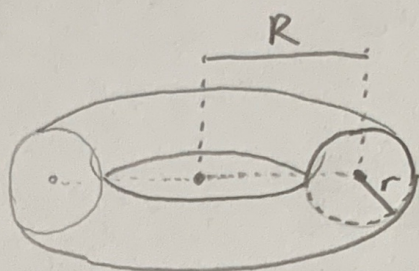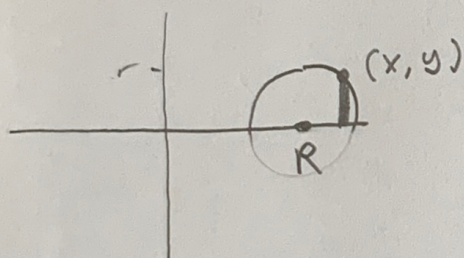
Find volume of torus:

circle

$(x-R)^2 + y^2 = r^2$

about y-axis

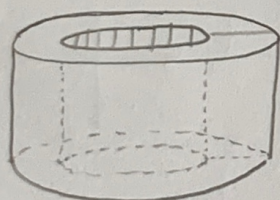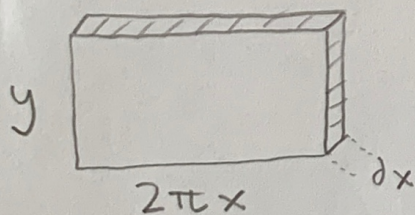## Shells

$(x-R)^2 + y^2 = r^2$

$$y = \sqrt{r^2 - (x-R)^2}$$

$$V_{SLAB} = 2\pi x \sqrt{r^2 - (x-R)^2}\, dx$$

This is volume of slab of top half of torus

$2\pi x$

BOUNDS
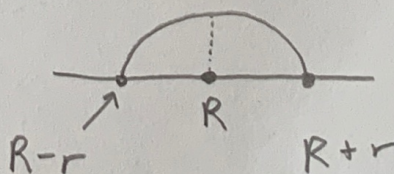
$R-r$ R $R+r$

VOLUME

$$V = 2\int_{R-r}^{R+r} 2\pi x \sqrt{r^2 - (x-R)^2}\, dx$$

$$= 4\pi \int_{R-r}^{R+r} x \sqrt{r^2 - (x-R)^2}\, dx$$