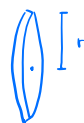
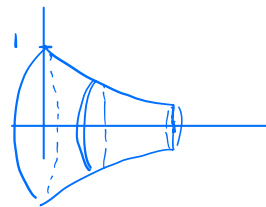
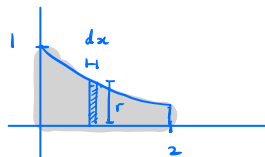


§ 8.2 Applications to geometry

Today we briefly introduce the concept of a solid of revolution and finding its volume.

Example Consider the region bounded by the curves $y = e^{-x}$, $y = 0$, $x = 0$, $x = 2$. Find the volume of the solid formed by revolving this region around the x -axis.



Revolving one rectangular slice yields a disk with volume $\pi r^2 dx$ and $r = e^{-x}$

$$\text{Total volume} = \int_0^2 \pi (e^{-x})^2 dx = \int_0^2 \pi e^{-2x} dx$$