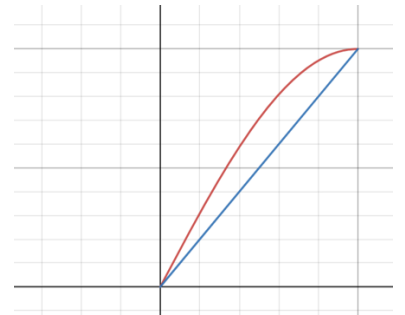


Consider the region bound by $y = \sin(\pi x)$ and $y = 2x$ as shown. Set up (do not evaluate) integrals for each of the following situations.

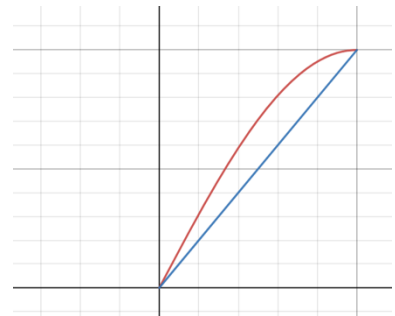
a) The area of the shaded region with respect to x



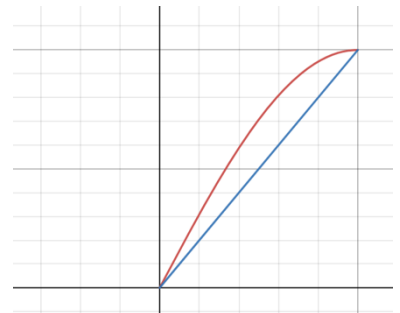
b) The area of the shaded region with respect to y



c) The volume of the solid generated when the region is revolved about the x axis, using disks/washers.



d) The volume of the solid generated when the region is revolved about the x axis, using cylindrical shells.



e) The volume of the solid generated when the region is revolved about the line $y = -2$ using either method.