1) Given the enclosed region $R$ between $f(x) = \sin x$ and $g(x) = e^{-x}$, find each of the following:

- **a)** Volume rotated about $y = 10$
- **b)** Volume rotated about $x = -4$
- **c)** Volume of the solid whose base is the region $R$
- **d)** Volume rotated about $y = -20$
  
whose vertical cross sections are equilateral triangles.

2) Given the enclosed region $R$ between $f(x) = \sqrt[3]{x}$ and the $x$-axis, find each of the following:

- **a)** Area of enclosed region (vertical cross sections)
- **b)** Area of enclosed region (horizontal cross sections)
- **c)** Volume of the solid whose base is the region $R$
- **d)** Volume of the solid whose base is the region $R$
  
whose vertical cross sections are squares
  
whose horizontal cross sections are semicircles.