Area/mass Section 8.4

1. Find the area of the region bounded by $y = -x + 6$, $y = 5\sqrt{x}$ and the *x*-axis.

A. Use slices perpendicular to the *x*-axis.

B. Use slices perpendicular to the *y*-axis

2 A. Find the area of the region bounded by the first arch of $y = \sin ax$ and $y = -\sin ax$ by taking strips parallel to the y-axis.

B. If a metal plate with constant density $a\ gm/cm^2$ has the shape of the region as in part A. Find the total mass of the plate.

3. A rod of length $\frac{3\pi}{4} m$ has a density of $\delta(x) = \frac{1}{1+x^2} gm/cm$ at a distance x cm from the left end. Find the mass of the rod.

4. An open cylindrical barrel of diameter 7*ft* and height 21*ft* is filled to a depth of 10*ft* by muddy water. The density of the water varies linearly with the depth of the water. If the density at the bottom is 80 pounds per cubic foot and the density at the top is 30 pounds per cubic foot find the total weight of the muddy water in the cylindrical barrel.