MAT126, Paper Homework "Bldg"

1. Find the area of the bounded region lying between the curves $y = x^2$ and $y = 4x - x^2$.

2. An architect has designed a building with a circular base in such a way that the height of the roof is the same at each point with the same x-coordinate. That is, cross-sections with a fixed x-coordinate are squares. If the diameter of the base is 100 feet, what is the volume of the building?