Let $A$ be the region in the first quadrant bounded by the curves $y = \sqrt{1 - x^2}, y = \sqrt{1 - \frac{x}{4}}$ and the line $y = 0$.

(a) Set up (do not evaluate) a definite integral representing the area of the region $A$. [Hint: Sketch the region $A$ first.]

(b) Find the exact volume of the solid formed by rotating the region $A$ about the $y$-axis.

Date: January 27, 2014.