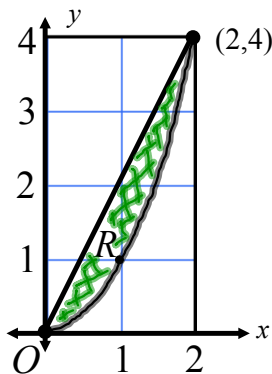AP Test Question
2009
No Calculator Allowed

4) Let R be the region in the first quadrant enclosed by the graphs of $y = 2x$ and $y = x^2$, as shown in the figure above.

a) Find the area of R.

b) The region R is the base of a solid. For this solid, at each x the cross section perpendicular to the x-axis has area $A(x) = \sin\left(\frac{\pi}{2}x\right)$. Find the volume of the solid.

c) Another solid has the same base R. For this solid, the cross sections perpendicular to the x-axis are squares. Write, but do not evaluate, an integral expression for the volume of the solid.

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