Let $R$ be the finite region bounded by the graphs of $y = \sqrt{x}$, $x = 4$, and the $x$-axis. Set up, but do not evaluate, definite integrals which represent the volumes of the following solids.

1. (4 points) The volume of the solid with base $R$ for which the cross-sections perpendicular to the $x$-axis are semi-circles.

2. (2 points) The volume of the solid formed when $R$ is revolved around the line $y = 5$. Integrate with respect to $x$. 
3. (2 points) The volume of the solid formed when $R$ is revolved around the line $x = -1$. Integrate with respect to $x$.

4. (2 points) The volume of the solid formed when $R$ is revolved around the line $x = -1$. Integrate with respect to $y$. 