

Unit 6 Take Home Quiz

Complete in your AP Prep book. You may use your calculator.

Let R be the region bounded by the graph of $y = e^{2x-x^2}$ and the horizontal line $y = 2$, and let S be the region bounded by the graph of $y = e^{2x-x^2}$ and the horizontal lines $y = 1$ and $y = 2$, as shown.

- Find the area of R .
- Find the area of S .
- Find the volume of the solid generated when R is rotated about the horizontal line $y = 2$.
- The vertical line $x = k$ divides the region R into two regions such that when these two regions are revolved about $y=1$, they generate solids with equal volumes. Write, but do not solve, an equation involving integral expressions whose solution gives the value of k .
- The region R is the base of a solid. For this solid, each cross section perpendicular to the x -axis is a square. Find the volume of this solid.

