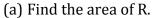
## **Unit 6 Take Home Quiz**

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.



- (b) Find the area of S.
- (c) Find the volume of the solid generated when R is rotated about the horizontal line y = 2.
- (d) 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.
- (e) 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.

