Name: _____ Date: _____ Period: _____ 2017

AP Calculus – Volume by Cross-Section Examples

1. Let R be the region bounded by the graphs of $y = 0$ and $y = 3$ on the interval $[1,5]$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **squares**.

2. Let R be the region bounded by the graphs of $y = 0$ and $y = 3$ on the interval $[1,5]$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **rectangles** whose heights are 1 less than twice its base length.

3. Let R be the region bounded by the graphs of $y = 0$ and $y = 3$ on the interval $[1,5]$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **equilateral triangles**.

4. Let R be the region bounded by the graphs of $y = 0$ and $y = 3$ on the interval $[1,5]$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **45-45-90 triangles** whose hypotenuse is on the base.

5. Let R be the region enclosed by $y = x^2$ and $y = 4$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **squares**.

6. Let R be the region enclosed by $y = x^2$ and $y = 4$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the y-axis are **squares**.

7. Let R be the region enclosed by $y = x$ and $y = x^2$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the x-axis are **semi-circles**.

8. Let R be the region enclosed by $y = x$ and $y = x^2$. Find the volume of the solid that has region R as its base and whose cross-sections perpendicular to the y-axis are **30-60-90 triangles** whose hypotenuse is a vertical component.