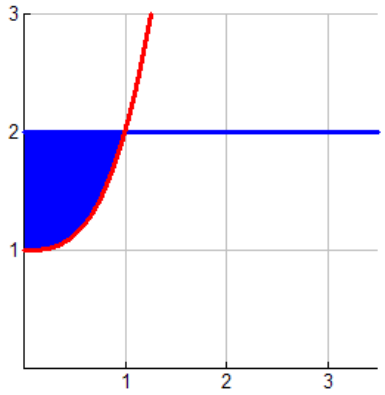
AP Calculus BC Name _____

Review Chapter 7

NO Calculator!

The area sketched below is the area bounded by y = 2, $y = x^3 + 1$, and x = 0. Using the diagram, set up the definite integral that represents the following, but **DO NOT** calculate.



1) The area described in the graph.

1) _____

2) The volume of the solid formed by rotating the area about the x-axis.

2) _____

3) The volume of the solid formed by rotating the area about the y-axis.

3) _____

4) The volume of the solid formed by rotating the area about the line x=3.

4) _____

5) The volume of the solid with square cross sections that are perpendicular to the x-axis.

5) _____

Calculator Allowed! Set up integral and then evaluate in the calculator!

6) Find the area of the region bounded by the graphs of
$f(x) = x^3 + x^2 - 6x$ and $g(x) = -x^2 + 2x$

Integral: _____ Area: _____

7) Find the volume of the solid generated by revolving the region bounded by the graph of $y = x^3$ and the line y=x, between x=0 and x=1, about the y-axis.

Integral: _____ Volume: _____

8) Find the volume of the solid formed by revolving the region bounded by the graphs of $y = x^3$, y = 0, x = 1 and x = 2 about the x-axis.

Integral: _____ Volume: _____

9) Let R be the region in the first quadrant whose base is bounded by f(x) = 1 + sin(2x) and $g(x) = e^{\frac{x}{2}}$. The region R is the base of a solid. For this solid, the cross sections perpendicular to the x-axis are semicircles with diameters extending from f(x) to g(x). Find the volume of this solid.

Integral: _____ Volume:_____

10. Find the length of the curve y = $\frac{x^4}{8} + \frac{1}{4x^2}$ from x = 1 to x = 2.