Quiz #2

Please print your name:

Problem 1. Consider the region bounded by the curves $y = x^2$, $y = 0$ and $x = 2$. Determine the area of this region.

Solution.

- First, you should make a sketch!

- Our region extends from $x = 0$ to $x = 2$ (no real need to compute intersections), so the area of our region is

$$\int_0^2 x^2 \, dx = \left[\frac{1}{3} x^3 \right]_0^2 = \frac{8}{3}.$$

Problem 2. As in the previous problem, consider the region bounded by the curves $y = x^2$, $y = 0$ and $x = 2$. Determine the volume of the solid generated by revolving this region about the x-axis.

Solution.

- Again, make a sketch first! (Or, in this case, refer to the earlier sketch.)

- Again, our region extends from $x = 0$ to $x = 2$, so the volume of our solid is

$$\int_0^2 \pi (x^2)^2 \, dx = \pi \int_0^2 x^4 \, dx = \pi \left[\frac{1}{5} x^5 \right]_0^2 = \frac{32}{5} \pi.$$

$\square$