# Calc IV | Scribe | Wed, Jan 27 2010

Prof. R is prolly going to be accepting applications for the Fairfield REU for Summer 2011!

Okay class, this is how the Scribe duty works:

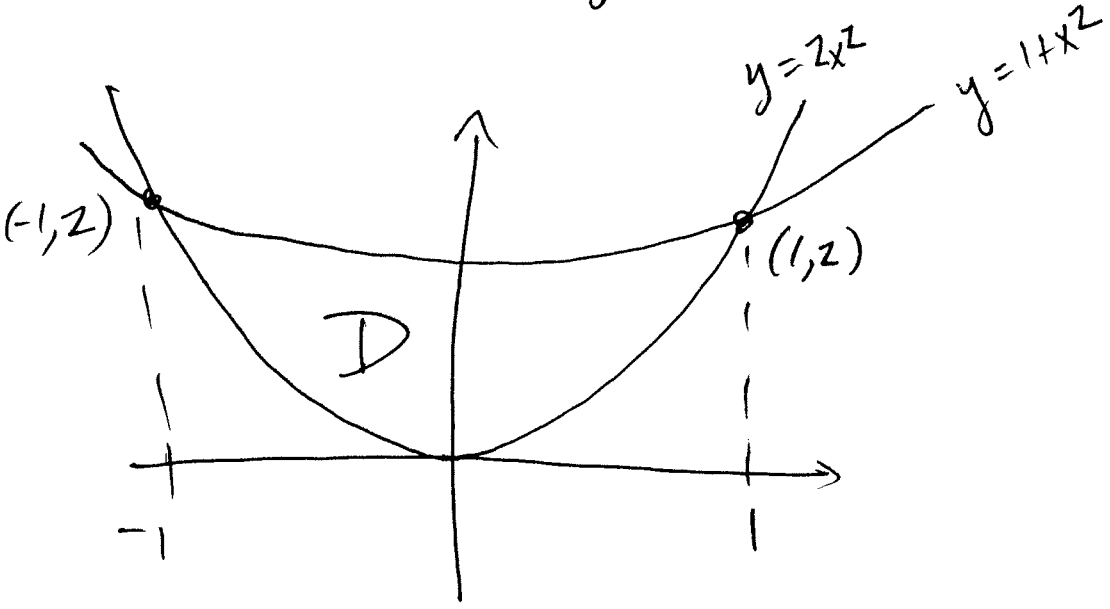
① The top of the first page of your Scribe notes should resemble what I have written here

② Everything else should be your best effort to capture what we do in class.

For example, suppose we want to compute

$$\iint_D xy^2 \, dA$$

Where $D$ is the region bounded between $y = 2x^2$ and $y = 1 + x^2$.




Then the description of $D$ is

$$-1 \leq x \leq 1$$

$$2x^2 \leq y \leq 1 + x^2$$

So the integral is:

$$\iint_D xy^2 \, dA = \int_{-1}^{1} \int_{2x^2}^{1+x^2} xy^2 \, dy \, dx$$

$$= \int_{-1}^{1} \left[ \frac{xy^3}{3} \Big|_{y=2x^2}^{y=1+x^2} \right] dx$$

$$= \int_{-1}^{1} \left[ \frac{x(1+x^2)^3}{3} - \frac{x(2x^2)^3}{3} \right] dx$$

$$= \cdots = 0.$$

this means "a good opportunity for practice"

The reason the answer is 0 is that the graph of $z = xy^2$ traps the same amount of volume above D as it does below D. Woot!!