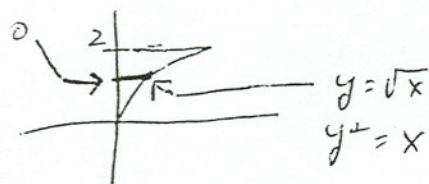


#10

125

7. Evaluate $\iint_R \sin(y^3) dA$, where R is the region bounded by $y = \sqrt{x}$, $y = 2$, and $x = 0$.



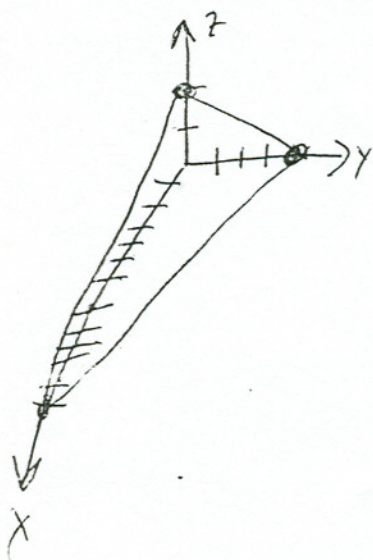
$$\text{integral} = \int_0^2 \int_0^{y^2} \sin(y^3) dx dy = \int_0^2 [x \sin(y^3)]_0^{y^2} dy$$

$$= \int_0^2 y^2 \sin(y^3) dy = \left[-\frac{\cos(y^3)}{3} \right]_0^2$$

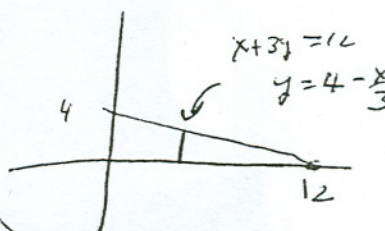
$$= -\frac{\cos 8}{3} + \frac{1}{3} = \frac{1}{3}(1 - \cos 8)$$

is 16.3/39

8. Consider the solid which is bounded by $x + 3y + 6z = 12$ and the three coordinate planes. Find the volume of the solid. Set up the integral, but do NOT compute the integral.



$$\iint_{\text{base}} \text{top} dx dy = \iint_{\text{iso}} 2 - \frac{y}{2} - \frac{x}{6} dy dx$$



$$= \int_0^{12} \int_0^{4-\frac{x}{3}} 2 - \frac{y}{2} - \frac{x}{6} dy dx$$