

$$x^2 + y^2 = 4$$

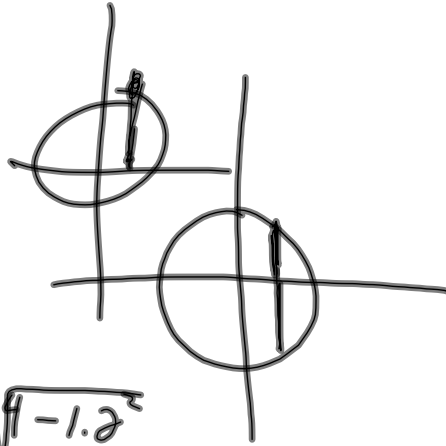
$$x = 1.2$$

$$y = \sqrt{4 - x^2} \rightarrow \text{TOP}$$

$$y = \sqrt{4 - 1.2^2}$$

$$\text{Side of square} = 2\sqrt{4 - 1.2^2}$$

$$\text{General case: } 2\sqrt{4 - x^2}$$



Volume of ^{one} square: specific ex:

$$(2\sqrt{4 - 1.2^2})^2 \cdot 0.0085$$

General Volume: $(2\sqrt{4 - x^2})^2 dx$

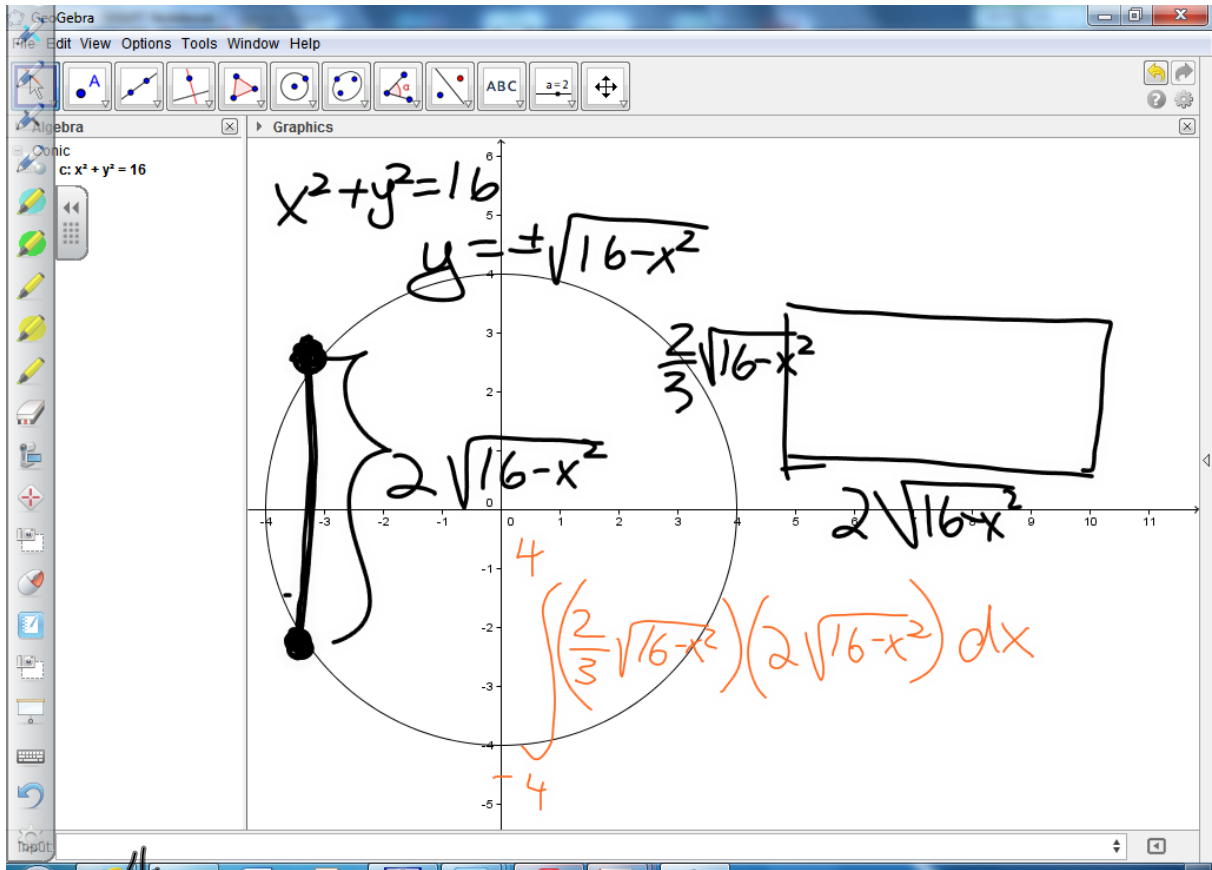
↑ width of paper →
make infinitely small

$$\text{Volume} = \int_{-2}^2 \underbrace{(2\sqrt{4 - x^2})^2}_{\text{area of cross section}} dx \rightarrow \text{width of each cross section}$$

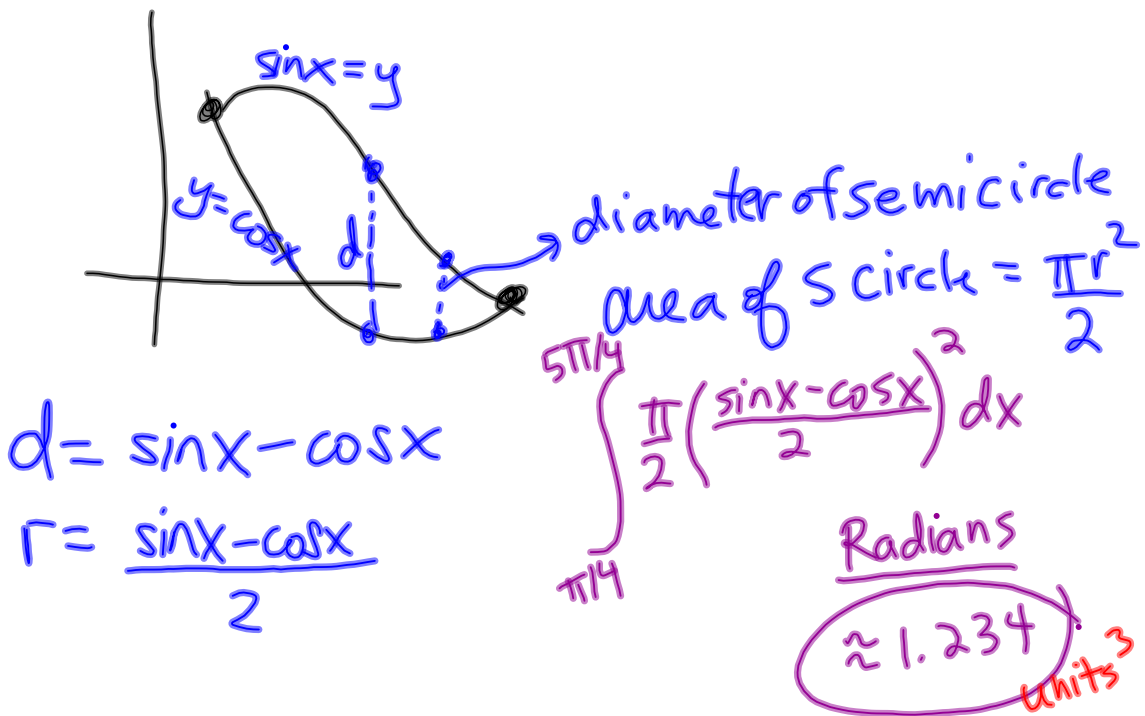
Flat base

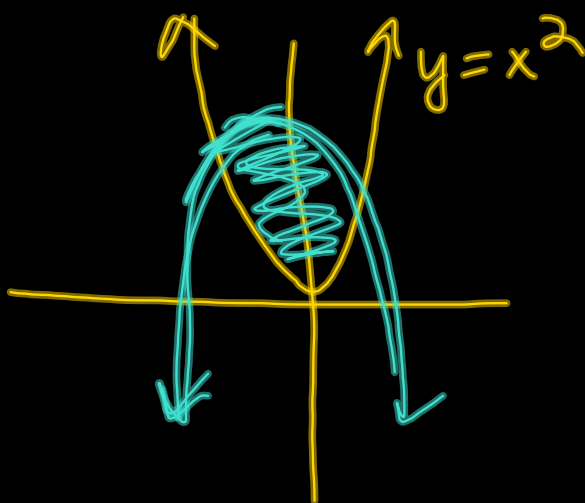
$$\int_{-2}^2 4(4 - x^2) dx \approx 42.6 \text{ cubic units}$$

$$x^2 + y^2 = 16$$

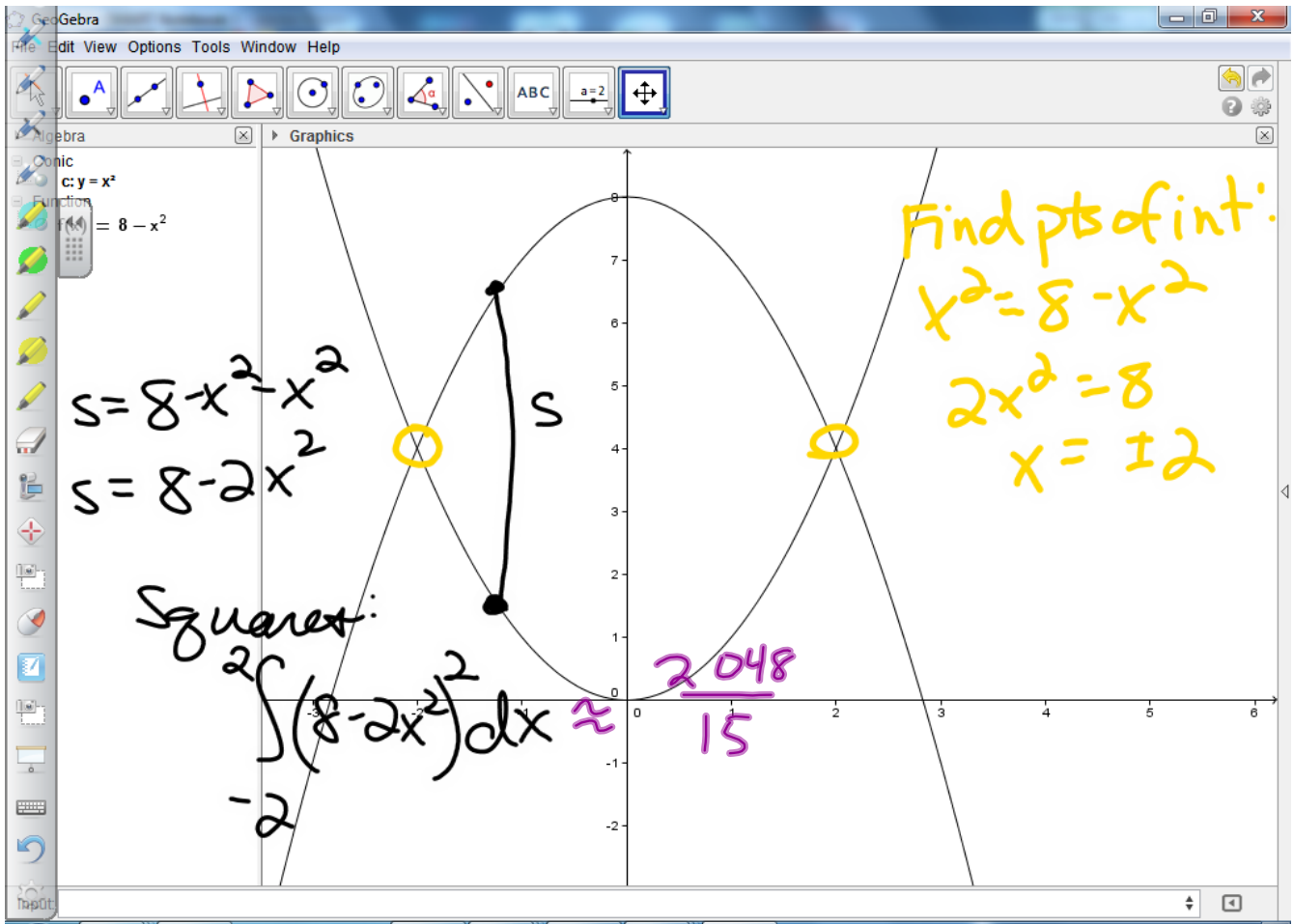


$$2 \int_0^4 \frac{4}{3} (16-x^2) dx \approx \frac{1024}{9} \text{ in}^3$$





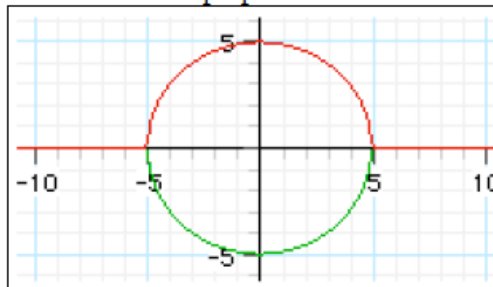
$$y = 8 - x^2$$



equil. Δ : $2 \int_{-2}^2 \frac{\sqrt{3}}{4} (8 - 2x^2)^2 dx \approx \frac{512\sqrt{3}}{15}$

hw

Example 8) Find the volume of the solid whose base is bounded by the circle $x^2 + y^2 = 25$ with the indicated cross sections taken perpendicular to the x -axis



a) squares

b) equilateral triangles

c) semi-circles

d) isosceles right triangles

Homework...MMM #34: Examples 9 & 10

Homework numbers 9 & 10