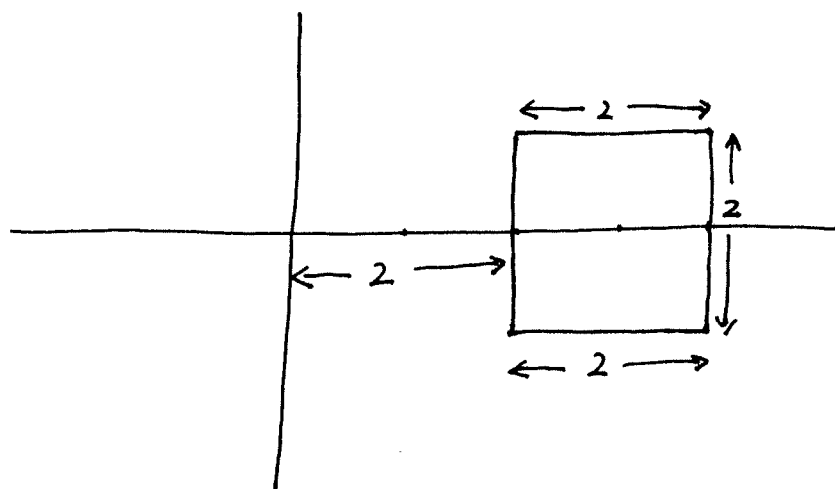# First Midterm Exam.

- Answer all questions.
- Show all calculations.
- No calculators and computers allowed.

① Calculate the area bounded by the parabola $y = 6 - x - x^2$ and the x-axis.

② A pyramid has a square base of side 2 ft and height 3 ft. Each side is an isosceles triangle. Calculate the volume of the pyramid

③

The square in the figure is rotated about the y-axis. Calculate the volume of the doughnut.

④ Calculate the length of the
Segment of the curve $y = x^{3/2}$
from $(0, 0)$ to $(4, 8)$. The length
formula is given by

$$L = \int_a^b \sqrt{1 + \left(\frac{dy}{dx}\right)^2} \, dx$$

⑤ The area bounded by the curve
$y^2 = 4x$ and $y = x$ is rotated about
the x-axis. Find the volume.