Problem 1: (17 points) Sketch the region bounded by the graphs \( x = y^2 \) and \( x = y + 2 \).

a) Find the area of the region.

b) If this area is rotated about the line \( x = 4 \), write a definite integral which gives the volume of the solid generated. (Do not evaluate the integral).

c) If this area is rotated about the line \( y = -1 \), write a definite integral which gives the volume of the solid generated. (Do not evaluate the integral).

Problem 2: (8 points) Let the base of a solid be the first quadrant plane region bounded by \( y = 1 - x^2 \), the \( x \)-axis, and the \( y \)-axis. Suppose that the cross sections perpendicular to the \( x \)-axis are squares. Find the volume of the solid.
Problem 1: (17 points) Sketch the region bounded by the graphs \( x = y^2 \) and \( x = 2 - y \).

a) Find the area of the region.

b) If this area is rotated about the line \( x = 4 \), write a definite integral which gives the volume of the solid generated. (Do not evaluate the integral).

c) If this area is rotated about the line \( y = -2 \), write a definite integral which gives the volume of the solid generated. (Do not evaluate the integral).

Problem 2: (8 points) Let the base of a solid be the first quadrant plane region bounded by \( y = 4 - x^2 \), the x-axis, and the y-axis. Suppose that the cross sections perpendicular to the x-axis are squares. Find the volume of the solid.