

**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.

Serial No.: \_\_\_\_\_ Student Name: \_\_\_\_\_ Student Number: \_\_\_\_\_  
Instructor: M. Z. Abu-Sbeih Math 102- Q2B Date: 18-7-2010

---

**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.