

Name: \_\_\_\_\_

## Worksheet #24

Math 221

**Instructions.** Put the your first and last name at the top of your paper. Everyone is to do their own worksheet but only one from each group is graded with the score shared. Be sure to **explain your reasoning**.

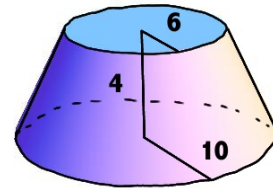
1. Write a definite integral that represents the following volumes.

(a) Slices perpendicular to the  $x$ -axis are squares over the area bounded by  $2x - x^2$  and the  $x$ -axis.

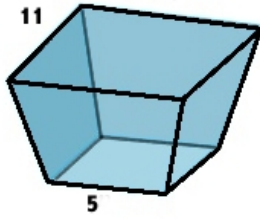
(b) Slices perpendicular to the  $x$ -axis are equilateral triangles over the area bounded by  $y = x$  and  $y = \sqrt{x}$ .

(c) Slices perpendicular to the  $y$ -axis are equilateral triangles over the area bounded by  $y = x$  and  $y = \sqrt{x}$ .

2. Use integration to compute the volume of a piece of a right circular cone whose base radius  $b = 10$  and top radius  $a = 6$  and overall height is 4.



3. A tank shaped like an inverted frustum of a pyramid with square base of side length 5 m. along the base and 11 m. along the top with height 2 m. What is the volume of the tank?



4. Compute the volume of a “rugby ball” if it has length 300 mm and circumference 600 mm and it is formed by rotating an ellipse about its major axis (these are actual official dimensions).