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Complete all of the problems in class. You may work in pairs and use the textbook. One of the problems will show up on a future quiz.

Name and section: _____

Weekly Summary:

- Volumes by discs or washers: (§7.2)

Rotation of disc slice about x-axis: $V = \int_{x=a}^{x=b} \pi[f(x)]^2 dx$

Rotation of disc slice about y-axis: $V = \int_{y=c}^{y=d} \pi[g(y)]^2 dy$

This method has slices perpendicular to the axis of rotation and the same variable of integration as the axis of rotation.

- Volumes by shells: (§7.3)

Rotation of shell slice about y-axis: $V = \int_{x=a}^{x=b} 2\pi x f(x) dx$

Rotation of shell slice about x-axis: $V = \int_{y=c}^{y=d} 2\pi y f(y) dy$

This method has slices parallel to the axis of rotation and the opposite variable of integration as the axis of rotation.

Workout Problems:

- Section 7.2:

1. Find the volume of the solid obtained by rotating the region bounded by: $y = x^2, y = 4, x = 0, x = 2$ about the y-axis. Sketch the region and indicate a typical disc or washer. (Problem 5)

2. Find the volume of a cap of a sphere of radius r and height h . (Hint: Remember the equation of a circle of radius r) (Problem 51)

- Section 7.3:

1. Use the method of cylindrical shells to find the volume generated by rotating the region: $y = x^2, y = 0, x = 1, x = 2$ about the line $x = 1$. Sketch the region and indicate a typical shell. (Problem 17)