

This quiz covers, from *Calculus* by Stewart 6<sup>th</sup> ed., ET, Sections: 6.2, 6.3.

Fill-in-the blanks/boxes.

- In 1a and 2a, fill in the blank with: perpendicular or parallel.
- In 1b, 1c, 1d, 2b, 2c, fill in the blank with a formula involving *some of*:  
 $2$ ,  $\pi$ , radius, radius<sub>big</sub>, radius<sub>little</sub>, average radius, height, and/or thickness.

### 1. Disk/Washer Method

Let's say you revolve some region in the  $xy$ -plane around an axis of revolution so you get a solid of revolution. Next you want to find the volume of this solid of revolution using the disk or washer method.

- 1a. You should partition the coordinate axis (i.e., the  $x$ -axis or the  $y$ -axis) that is parallel to the axis of revolution.
- 1b. If you use the **disk method**, then the volume of a typical disk is:

$$\pi (\text{radius})^2 (\text{height})$$

- 1c. If you use the **washer method**, then the volume of a typical washer is:

$$\pi (\text{rad.}_{\text{big}})^2 (\text{height}) - \pi (\text{rad.}_{\text{little}})^2 (\text{height}) \text{ or } \pi [(\text{rad}_{\text{big}})^2 - (\text{rad}_{\text{little}})^2] (\text{height})$$

- 1d. If you partition the  $z$ -axis, the  $\Delta z =$  height.

### 2. Shell Method

Let's say you revolve some region in the  $xy$ -plane around an axis of revolution so you get a solid of revolution. Next you want to find the volume of this solid of revolution using the shell method.

- 2a. You should partition the coordinate axis (i.e., the  $x$ -axis or the  $y$ -axis) that is perpendicular to the axis of revolution.
- 2b. If you use the **shell method**, then the volume of a typical shell is:

$$2\pi (\text{average radius}) (\text{height}) (\text{thickness})$$

- 2c. If you partition the  $z$ -axis, the  $\Delta z =$  thickness  $\equiv$  radius<sub>big</sub> - radius<sub>little</sub>.