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 \textit{parallel} to the axis of revolution.

1b. If you use the \textit{disk method}, then the volume of a typical disk is:

   \[ \pi \left( \text{radius} \right)^2 \left( \text{height} \right) \]

1c. If you use the \textit{washer method}, then the volume of a typical washer is:

   \[ \pi \left( \text{rad.}_{\text{big}} \right)^2 \left( \text{height} \right) - \pi \left( \text{rad.}_{\text{little}} \right)^2 \left( \text{height} \right) = \pi \left[ \left( \text{rad.}_{\text{big}} \right)^2 - \left( \text{rad.}_{\text{little}} \right)^2 \right] \left( \text{height} \right) \]

   1d. If you partition the z-axis, the \( \Delta z = \frac{\text{height}}{2} \).

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 \textit{perpendicular} to the axis of revolution.

2b. If you use the \textit{shell method}, then the volume of a typical shell is:

   \[ 2\pi \left( \text{average \ radius} \right) \left( \text{height} \right) \left( \text{thickness} \right) \]

2c. If you partition the z-axis, the \( \Delta z = \frac{\text{thickness} \cdot \text{radius} \_{\text{big}} - \text{radius} \_{\text{little}}}{2} \).