Disks – Revolve about x-axis – no gap

$$\pi \int_a^b (\text{radius})^2 \, dx$$

Washers – Revolve about x-axis – with gap

$$\pi \int_a^b (\text{Big Radius})^2 - (\text{small radius})^2 \, dx$$

Shells – Revolve about y-axis – no gap

$$2\pi \int_a^b (\text{radius})(\text{height}) \, dx$$

Shells with Gap – Revolve about y-axis – with gap

$$2\pi \int_a^b (\text{radius})[(\text{Big Height}) - (\text{small height})] \, dx$$