1. Compute the area of the region enclosed by $y = e^x$, $y = x^2 - 1$, $x = -1$ and $x = 1$.

2. Compute the area of the region enclosed by $y = |x|$ and $y = x^2 - 2$.

3. Compute the volume of a frustum of a right circular cone with height $h$, lower base radius $R$ and top radius $r$.

4. Compute the volume of the cap of a sphere with radius $r$ and height $h$.

5. Find the volume of the solid obtained by rotating the region bounded by $y = 1 - x^2$ and $y = 0$ about $x$-axis.

6. The region enclosed by $x = y^2$, $x = 1$ on the $xy$-plane is rotated about $x = 1$ to form a solid. Find the volume of the solid.

7. Use the cylindrical shells to find the volume of the solid obtained by rotating the region bounded by $y = e^{-x^2}$, $y = 0$, $x = 0$, $x = 1$ about the $y$-axis.

8. Use the cylindrical shells to find the volume of the solid obtained by rotating the region bounded by $y = x^2$, $y = 2 - x^2$ about $x = 1$. 