Consider the region bounded by $y = x^2$, $y = 0$, and $x = 1$.

1. Using the disk/washer method, find the volume resulting from revolving the region about the line $x = 2$.
2. Using the cylindrical shell method, find the volume resulting from revolving the region about the $x$-axis.

Consider the region bounded by $y = \sqrt{x}$, $x = 0$, and $y = 2$.

1. Using the disk/washer method, find the volume resulting from revolving the region about the line $y = 3$.
2. Using the cylindrical shell method, find the volume resulting from revolving the region about the $y$-axis.