1. The base of a solid is the portion of the unit disk in the first quadrant. Slices parallel to the 
y-axis are equilateral triangles. Find the volume.

\[ \text{Answer: } V = \frac{\sqrt{3}}{6}. \]

\textit{Hint:} The area of an equilateral triangle of side \(b\) is \(A = \frac{\sqrt{3}}{4} b^2\).

2. The region bounded by \(y = e^x - 1, \ y = 0\) and \(x = 1\) is rotated about the \(x\)-axis. Use the \textit{Method of Disks} to find the volume.

\[ \text{Answer: } V = \frac{\pi}{2} (e^2 - 4e + 5). \]

3. The region bounded by \(y = 2x^3\) and \(y = x^2\) is rotated about the line \(y = -1\). Find the resulting volume by the \textit{Method of Washers}.

\[ \text{Answer: } V = \frac{19\pi}{840}. \]

\textit{Hint:} Where do \(y = 2x^3\) and \(y = x^2\) cross?

4. The region bounded by the \(x\)-axis, \(x = 1, x = 3\) and \(y = \exp(-x^2)\) is rotated about the \(y\)-axis. Find the resulting volume by the \textit{Method of Shells}.

\[ \text{Answer: } V = \pi(e^{-1} - e^{-9}). \]